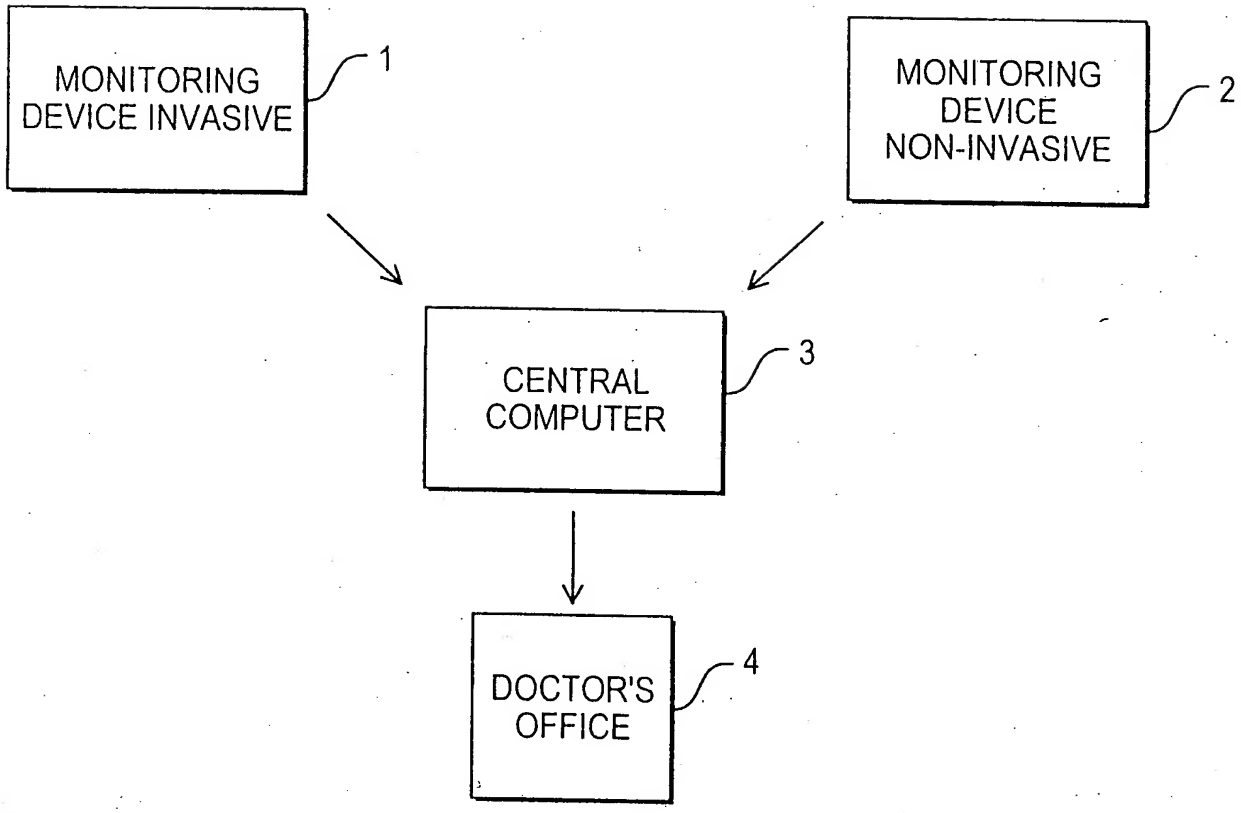
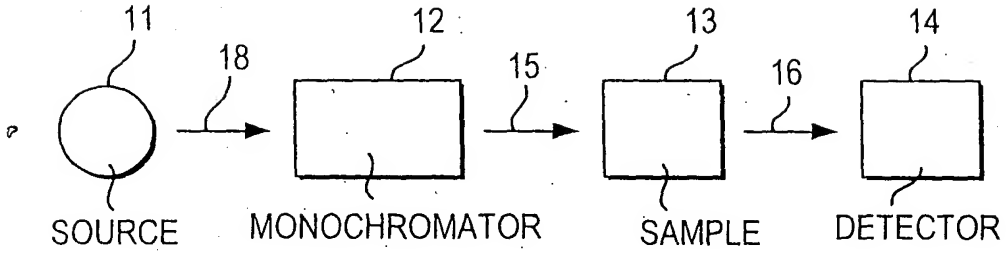
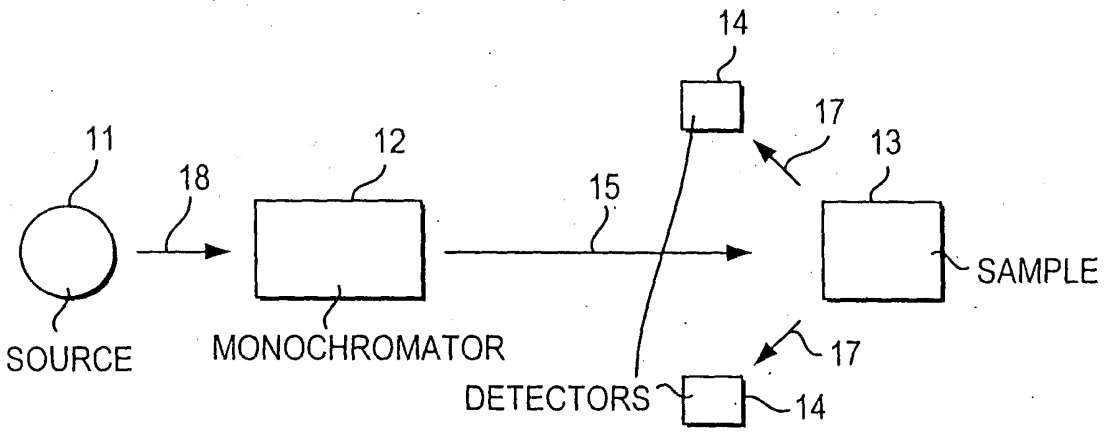

MONITORING DEVICE INVASIVE
1
MONITORING DEVICE NON-INVASIVE
2
CENTRAL COMPUTER
3
DOCTOR'S OFFICE
4

FIG. 1



NEAR-INFRARED TRANSMITTANCE (NIT)

FIG. 2(A)



NEAR-INFRARED REFLECTANCE (NIR)

FIG. 2(B)

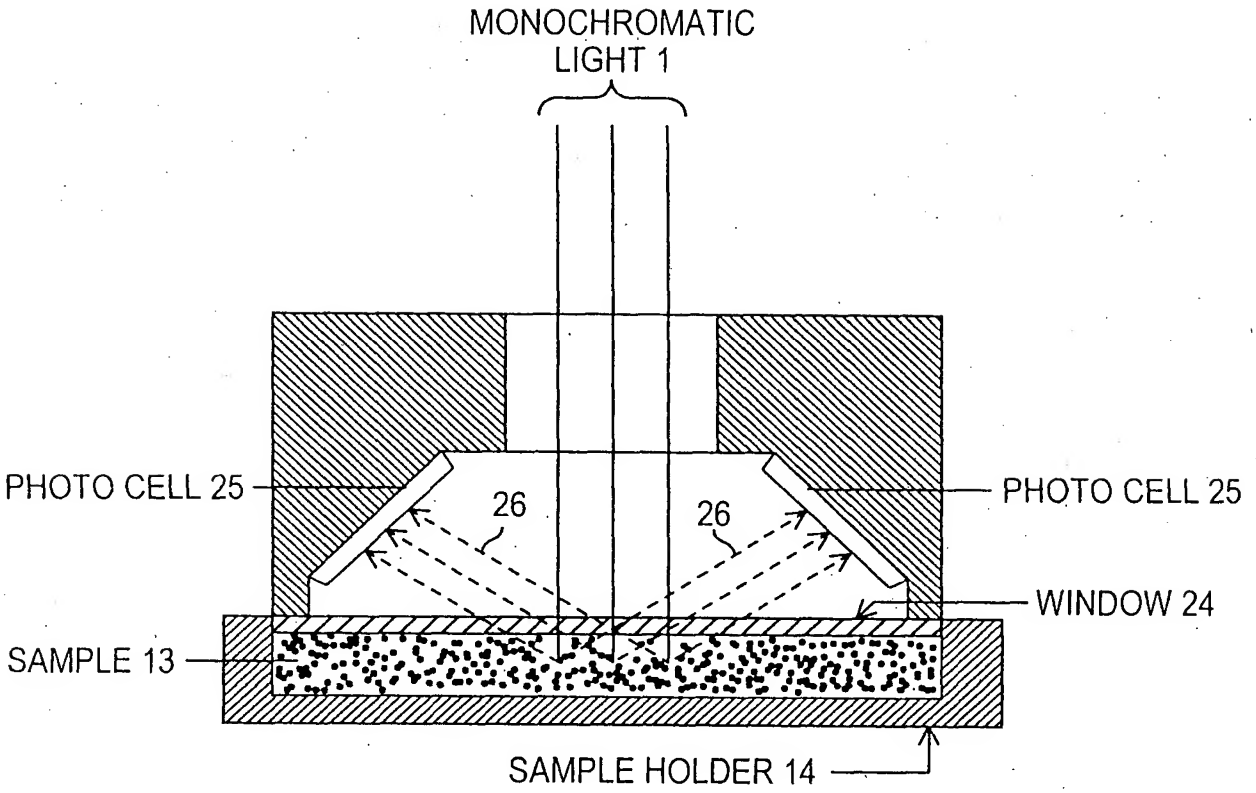

MONOCHROMATIC
LIGHT 1
PHOTO CELL 25
26
26
PHOTO CELL 25
WINDOW 24
SAMPLE 13
SAMPLE HOLDER 14

FIG. 3

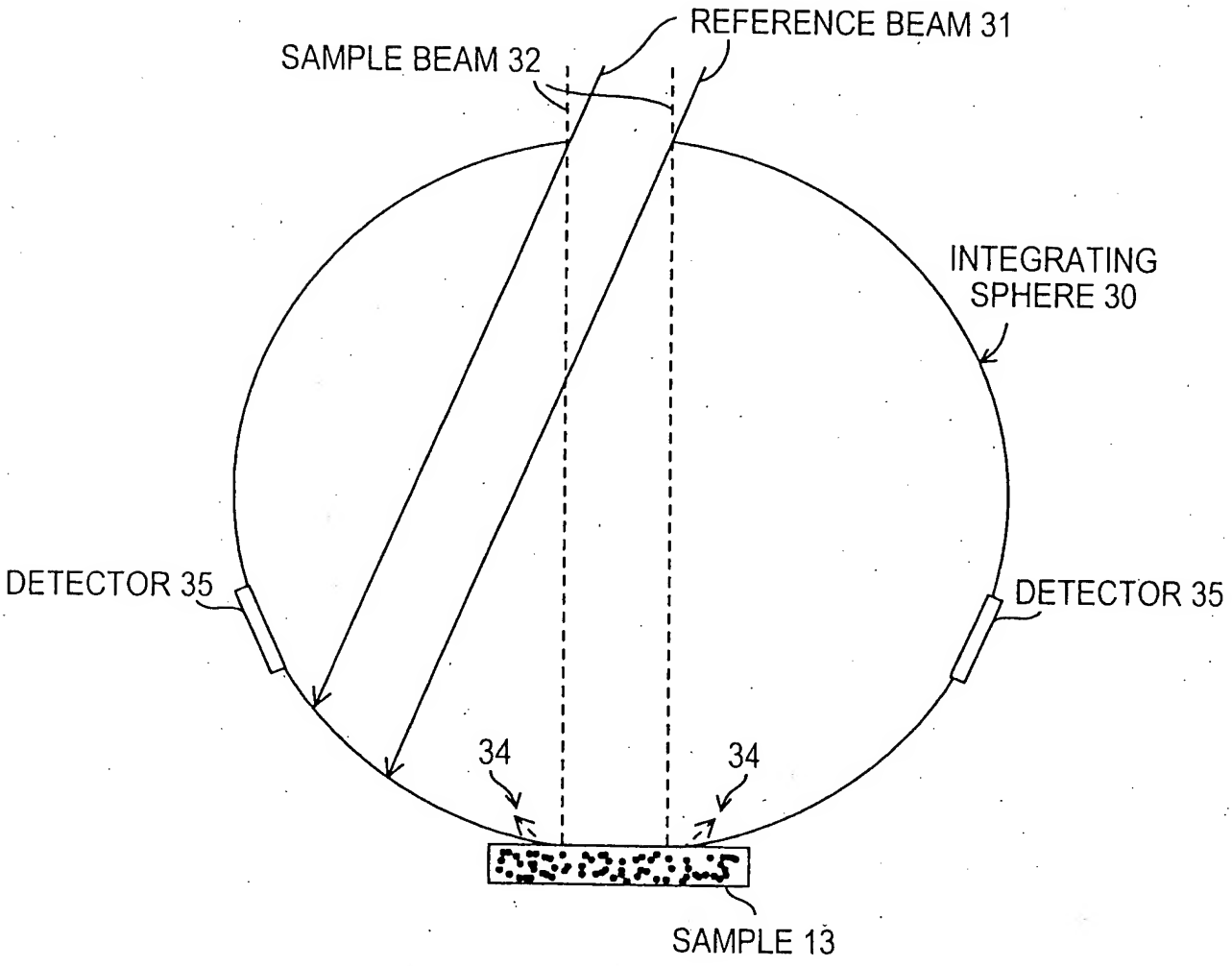

REFERENCE BEAM 31
SAMPLE BEAM 32
INTEGRATING SPHERE 30
DETECTOR 35
DETECTOR 35
34
34
SAMPLE 13

FIG. 4

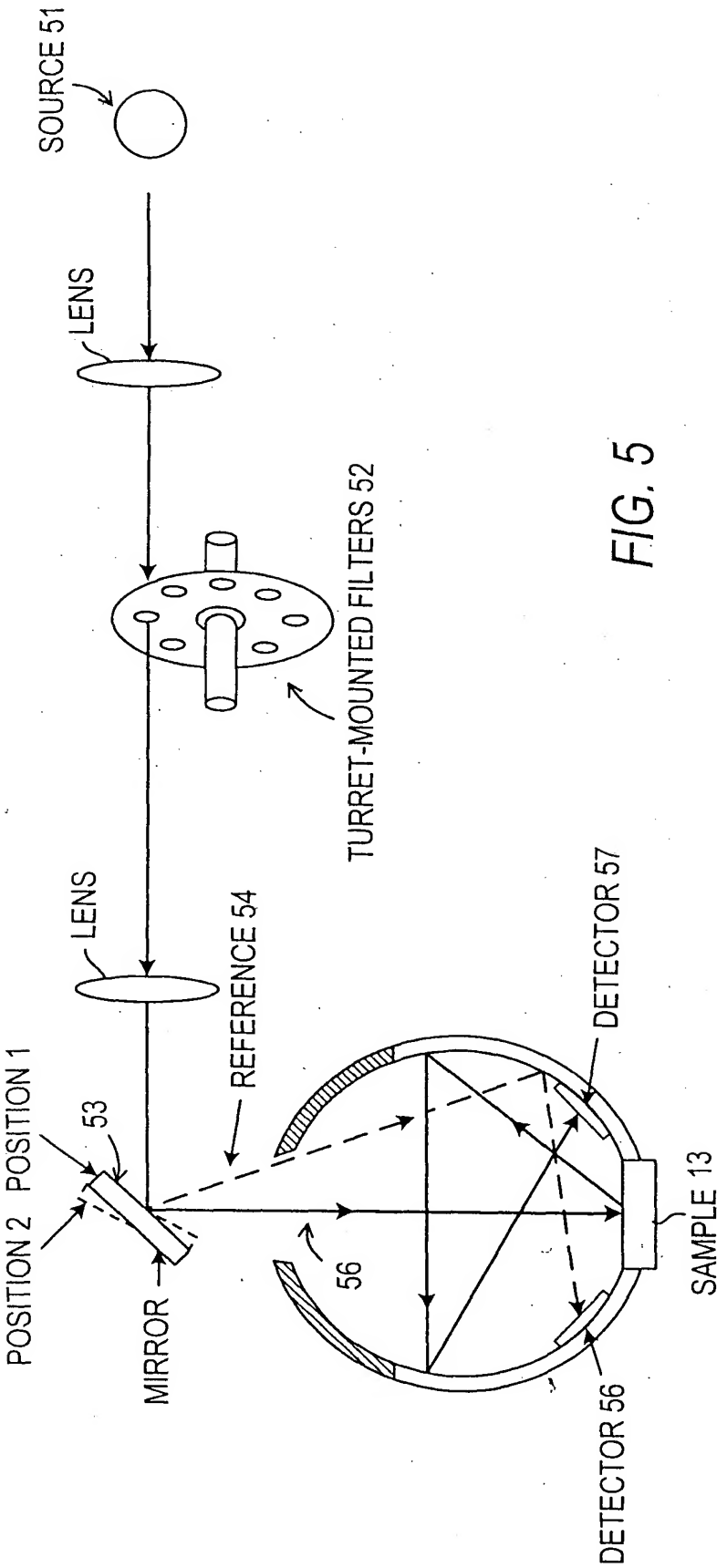

SOURCE 51
LENS
TURRET-MOUNTED FILTERS 52
LENS
REFERENCE 54
DETECTOR 57
POSITION 1
POSITION 2
53
MIRROR
56
SAMPLE 13
DETECTOR 56

FIG. 5

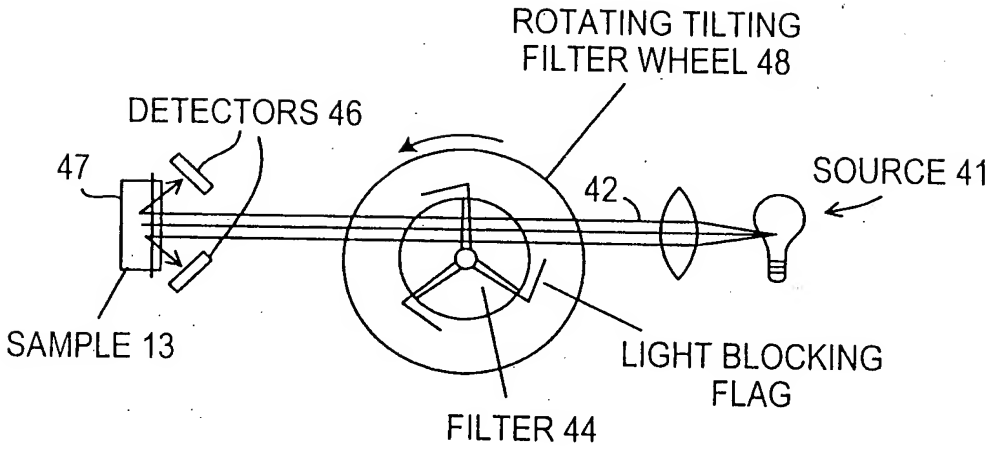

ROTATING TILTING
FILTER WHEEL 48
DETECTORS 46
47
42
SOURCE 41
SAMPLE 13
LIGHT BLOCKING
FLAG
FILTER 44

FIG. 6

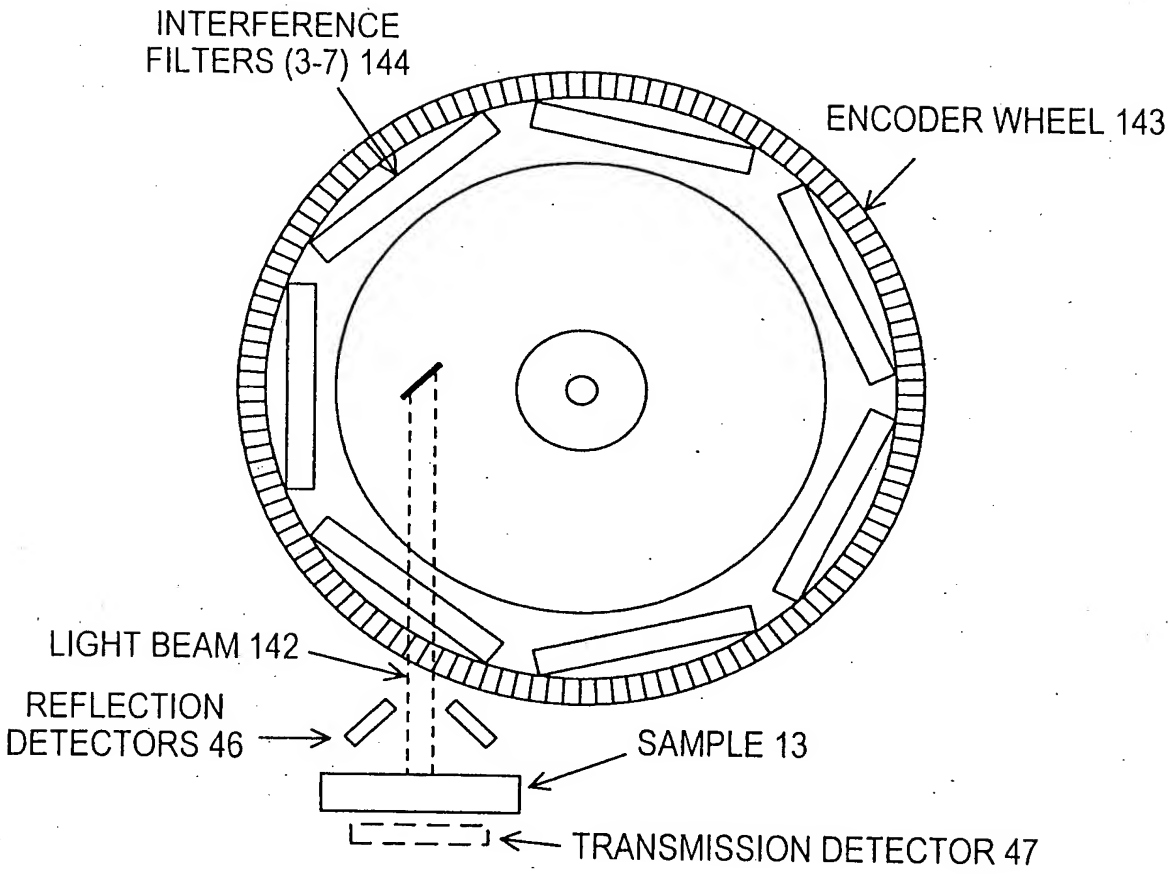
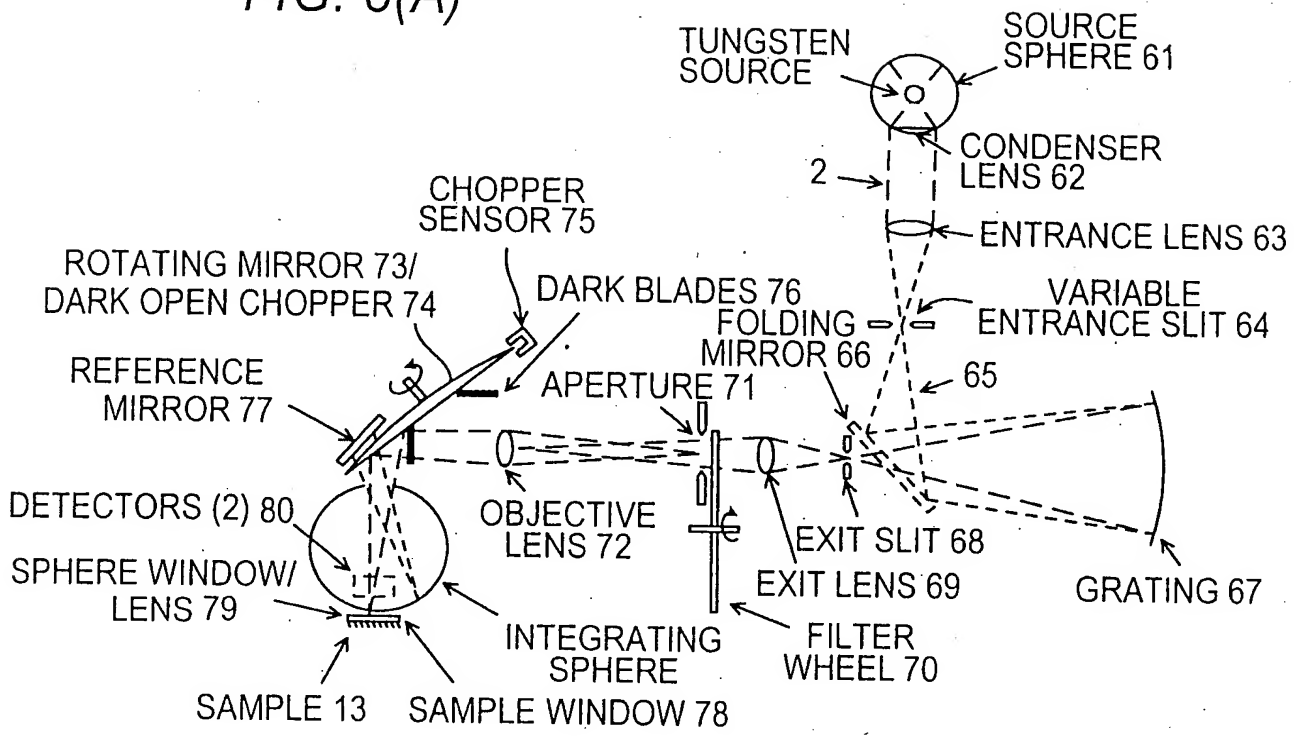

INTERFERENCE
FILTERS (3-7) 144
ENCODER WHEEL 143
LIGHT BEAM 142
REFLECTION
DETECTORS 46
SAMPLE 13
TRANSMISSION DETECTOR 47

FIG. 7

FIG. 8(A)


TUNGSTEN SOURCE
SOURCE SPHERE 61
CONDENSER LENS 62
2
CHOPPER SENSOR 75
ENTRANCE LENS 63
ROTATING MIRROR 73/ DARK OPEN CHOPPER 74
DARK BLADES 76
VARIABLE ENTRANCE SLIT 64
FOLDING MIRROR 66
65
REFERENCE MIRROR 77
APERTURE 71
DETECTORS (2) 80
OBJECTIVE LENS 72
EXIT SLIT 68
SPHERE WINDOW/ LENS 79
EXIT LENS 69
GRATING 67
INTEGRATING SPHERE
FILTER WHEEL 70
SAMPLE 13
SAMPLE WINDOW 78

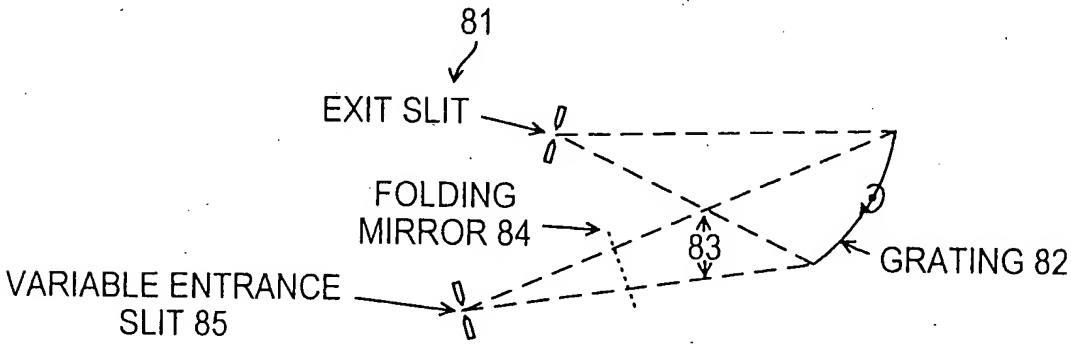

81
EXIT SLIT
FOLDING MIRROR 84
83
GRATING 82
VARIABLE ENTRANCE SLIT 85

FIG. 8(B)

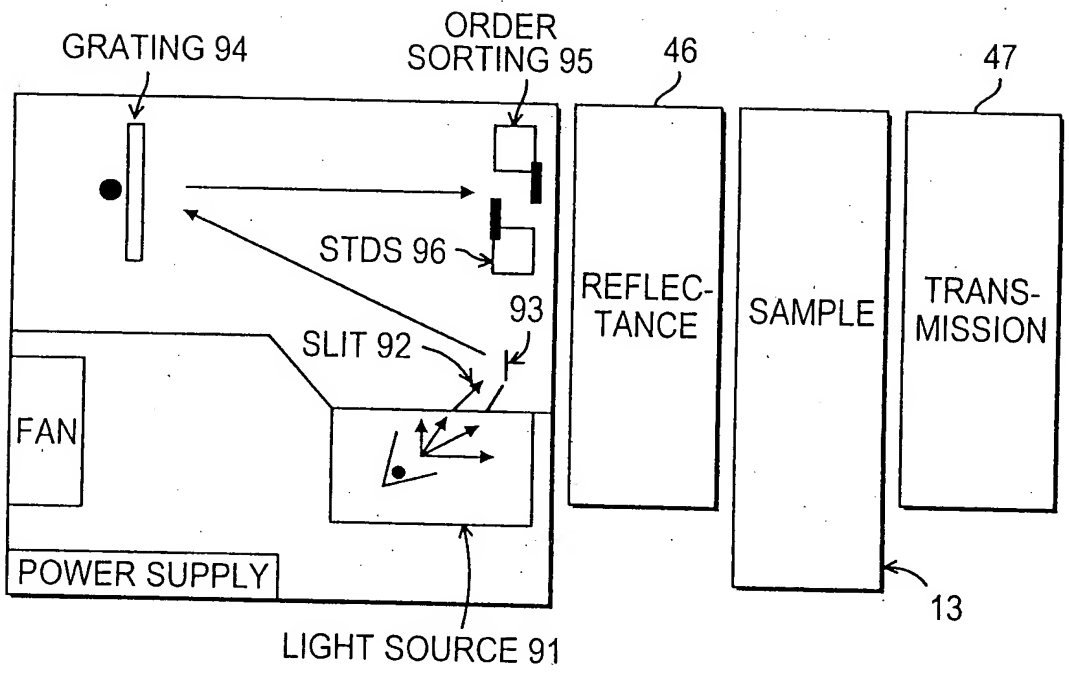

GRATING 94
ORDER SORTING 95
46
47
STDS 96
93
SLIT 92
REFLEC-TANCE
SAMPLE
TRANS-MISSION
FAN
POWER SUPPLY
LIGHT SOURCE 91
13

FIG. 9

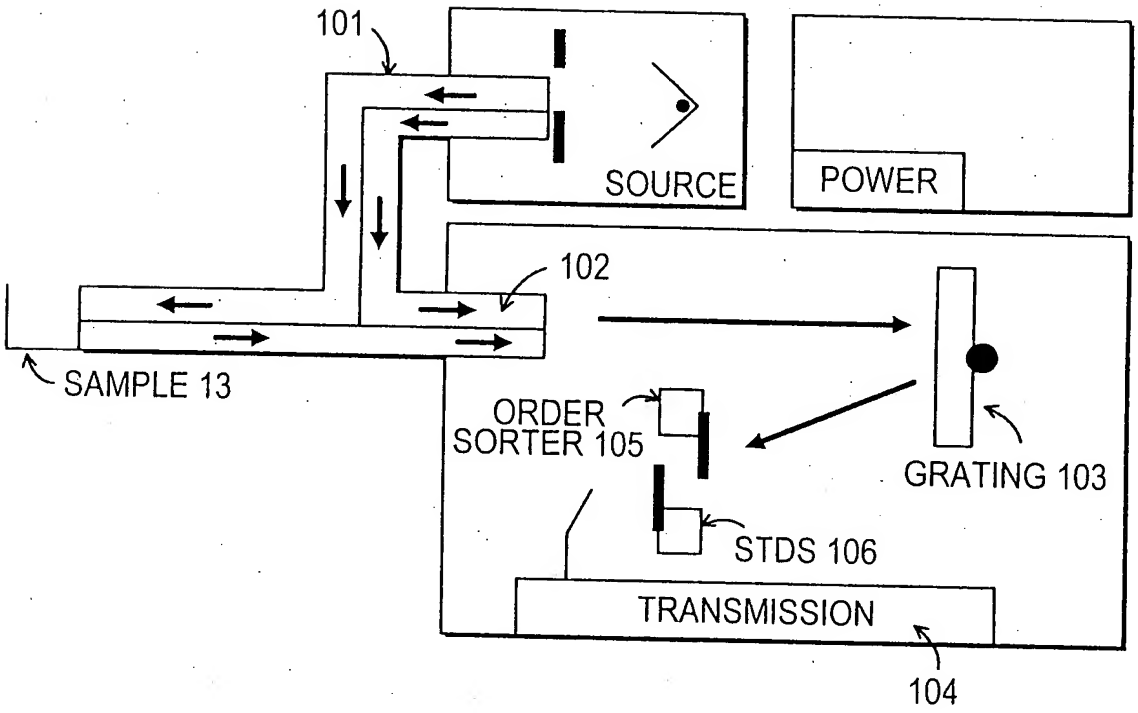

101
SOURCE
POWER
102
SAMPLE 13
ORDER
SORTER 105
GRATING 103
STDS 106
TRANSMISSION
104

FIG. 10

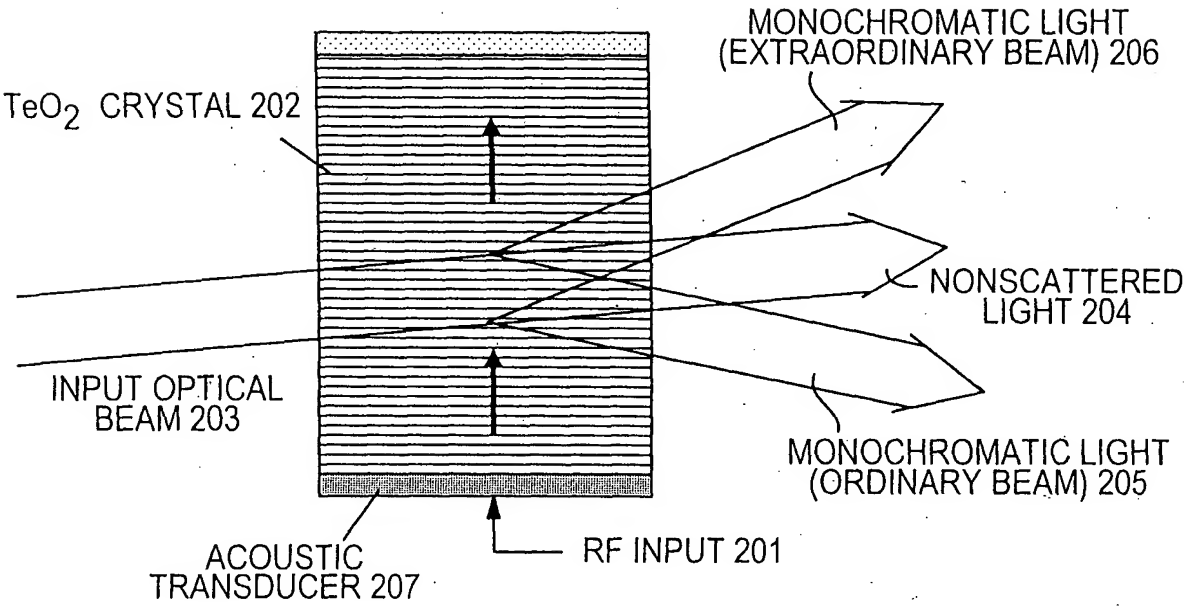

MONOCHROMATIC LIGHT
(EXTRAORDINARY BEAM) 206
TeO_2 CRYSTAL 202
NONSCATTERED
LIGHT 204
INPUT OPTICAL
BEAM 203
MONOCHROMATIC LIGHT
(ORDINARY BEAM) 205
ACOUSTIC
TRANSDUCER 207
RF INPUT 201

FIG. 11

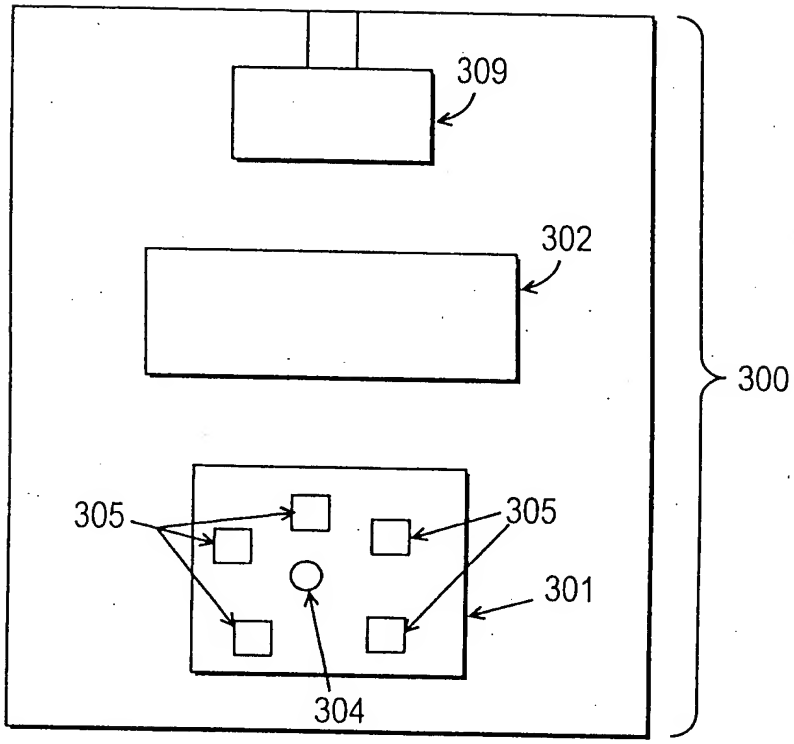


FIG. 12(A)

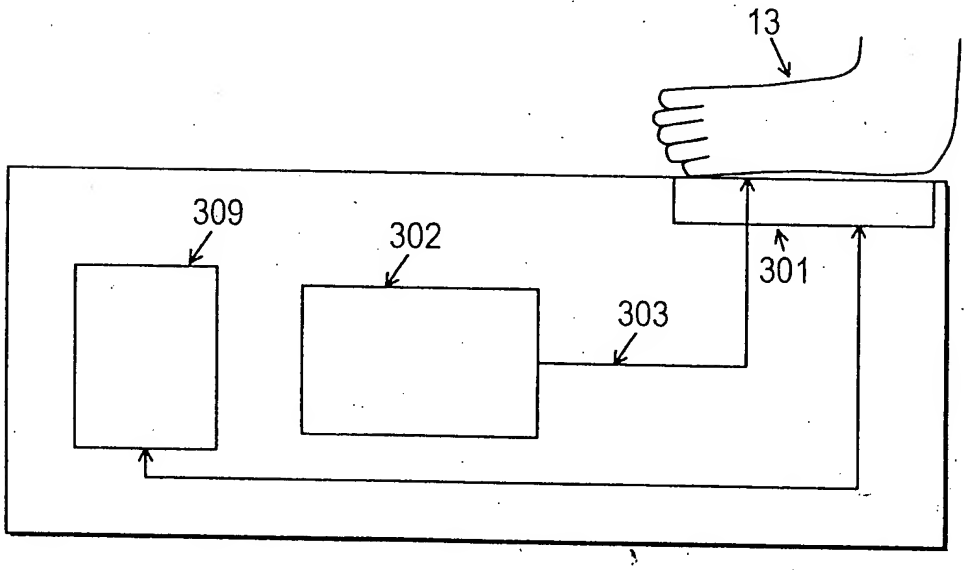


FIG. 12(B)

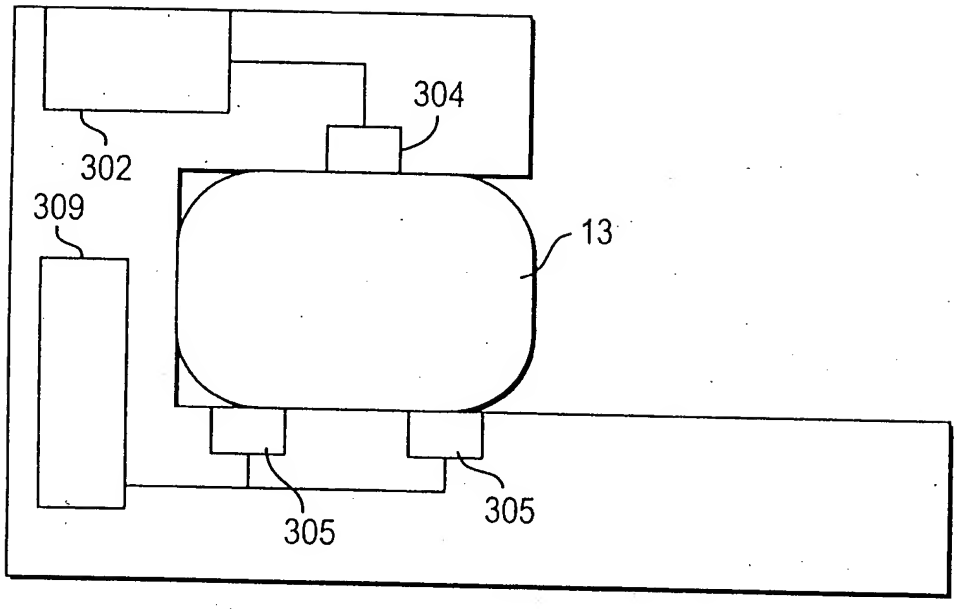


FIG. 12C

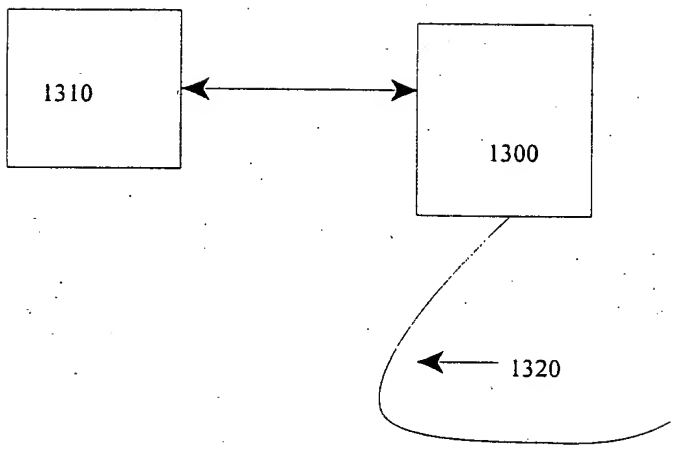


Fig. 13

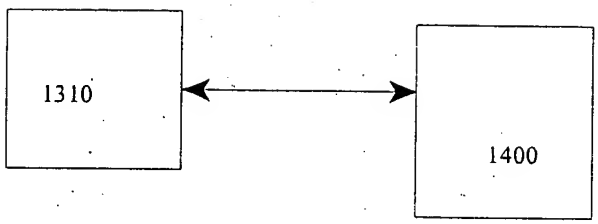


Fig. 14

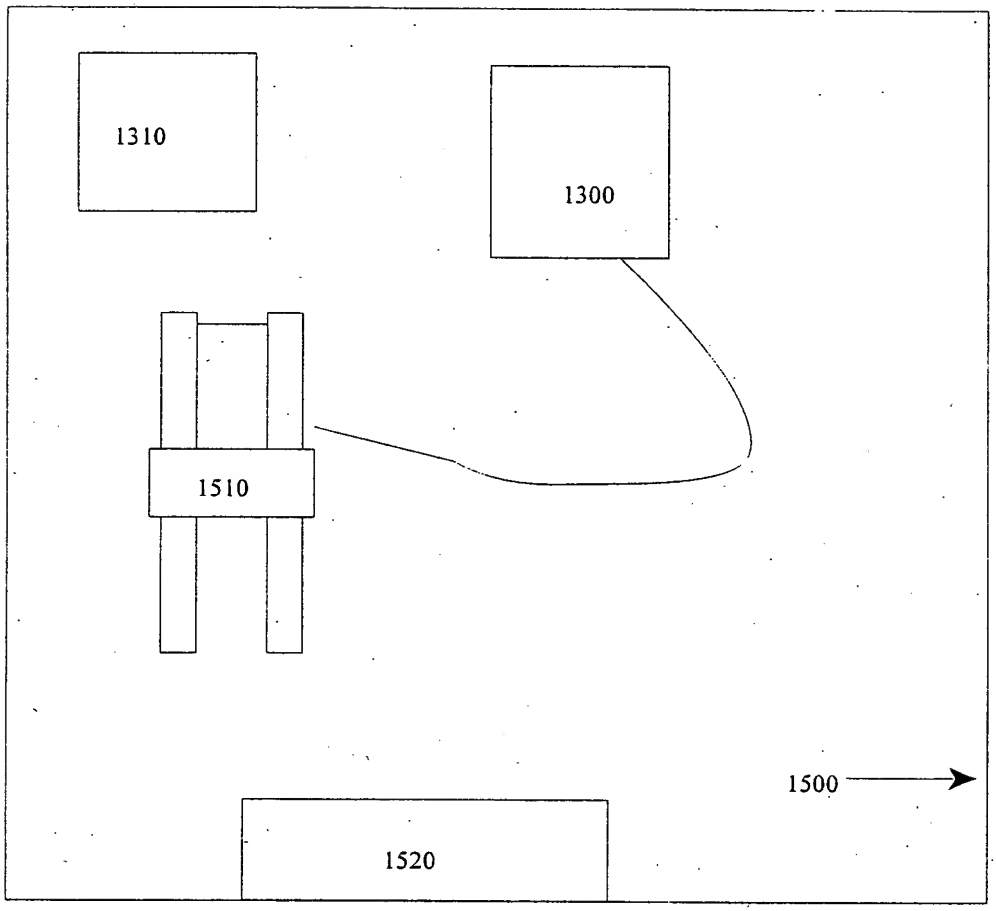


Fig. 15

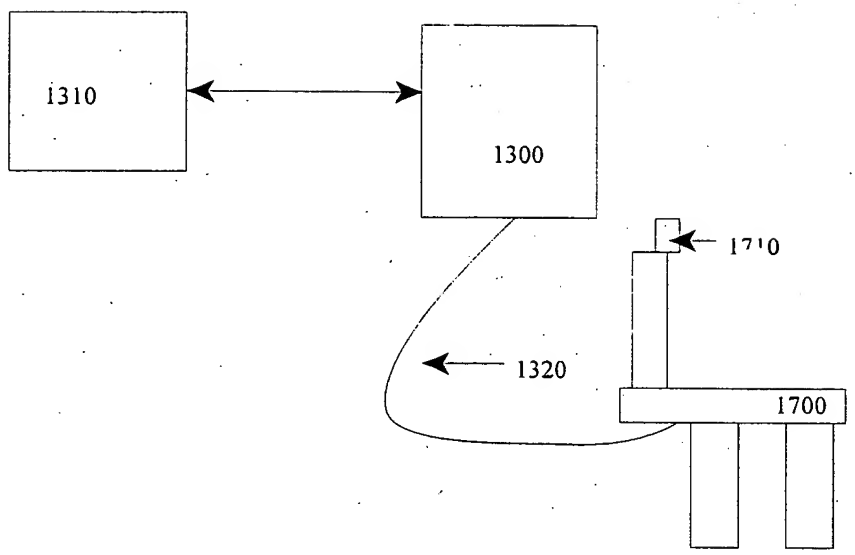


Fig. 16

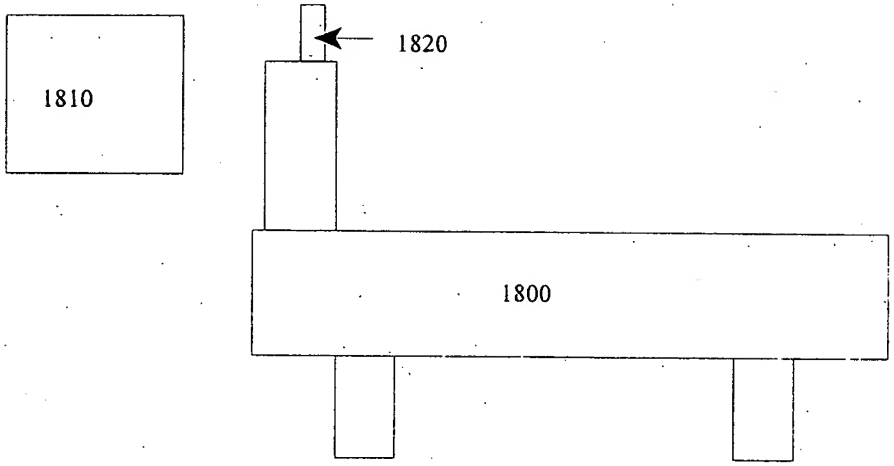


Fig. 17

DIFFUSE REFLECTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	1	1	1	1	1	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	1	1	0	0	1	1	1
KUBLMUNK	0	1	1	1	1	1	0	1	0	0	1	1	0
SMOOTHNG	0	1	1	1	1	1	1	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 18

DIFFUSE REFLECTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0	0
KUBLMUNK	0	1	0	0	0	0	1	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 19

DIFFUSE TRANSMITTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	1	1	1	1	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	0	1	0	0	1	1	1
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	1	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 20A

DIFFUSE TRANSMITTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 20B

CLEAR TRANSMITTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	1	1	1	0	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	0	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	0	0	1	0	0	1	1	0

FIG. 21A

CLEAR TRANSMITTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	NULLS	BASECORR	NORMALIZ	FIRSTDRV	SECNDDRV	MULTSCAT	KUBLMUNK	SMOOTHNG	RATIO	MEANCNTR	SGDERIV1	SGDERIV2	ABS2REFL
NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 21B

DERIVATIVE SPACING:

SPACING = INT (n ^ 1.4), n = 1 : 10

= 1, 2, 4, 6, 9, 12, 15, 18, 21, 25

FIG. 22

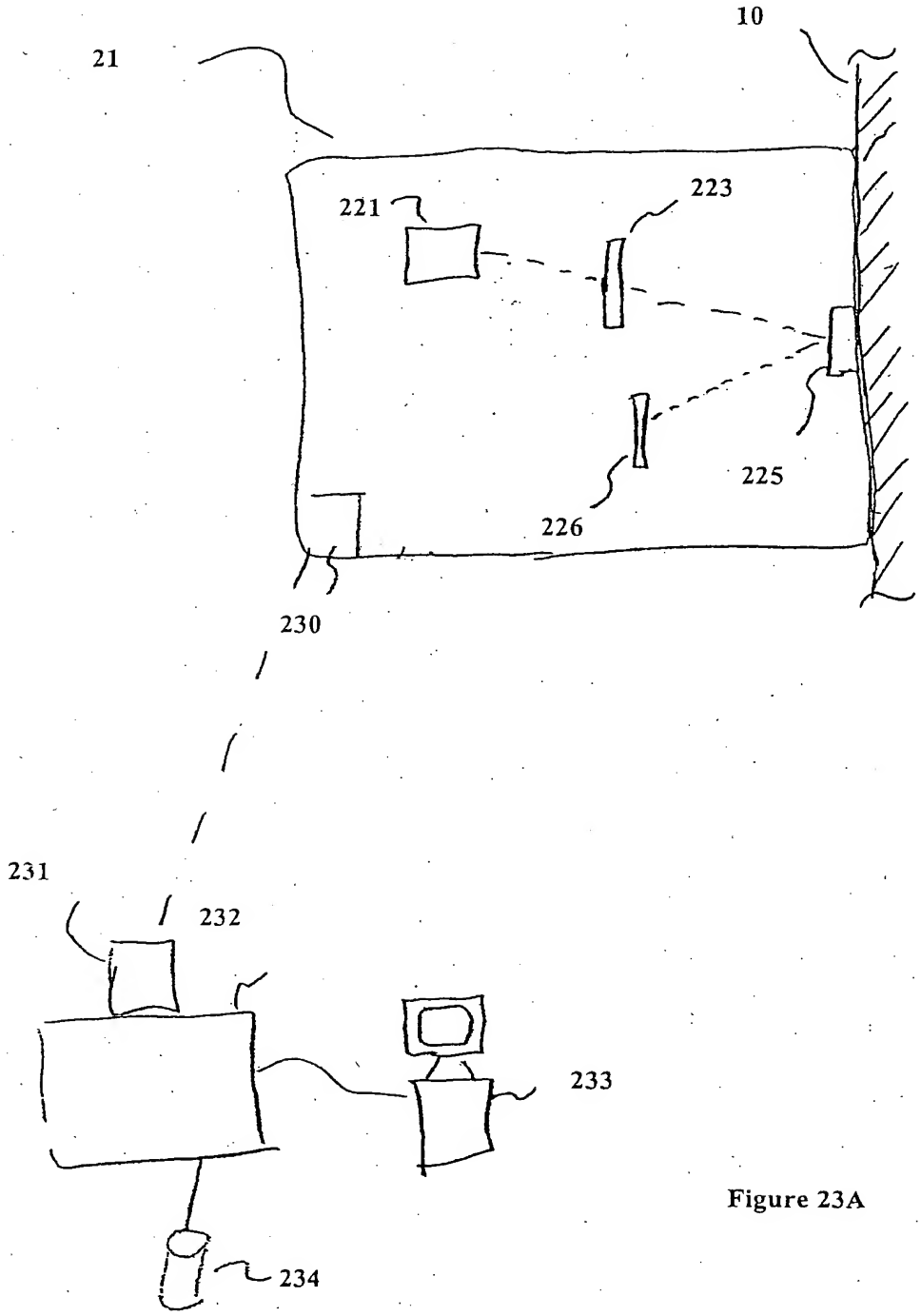


Figure 23A

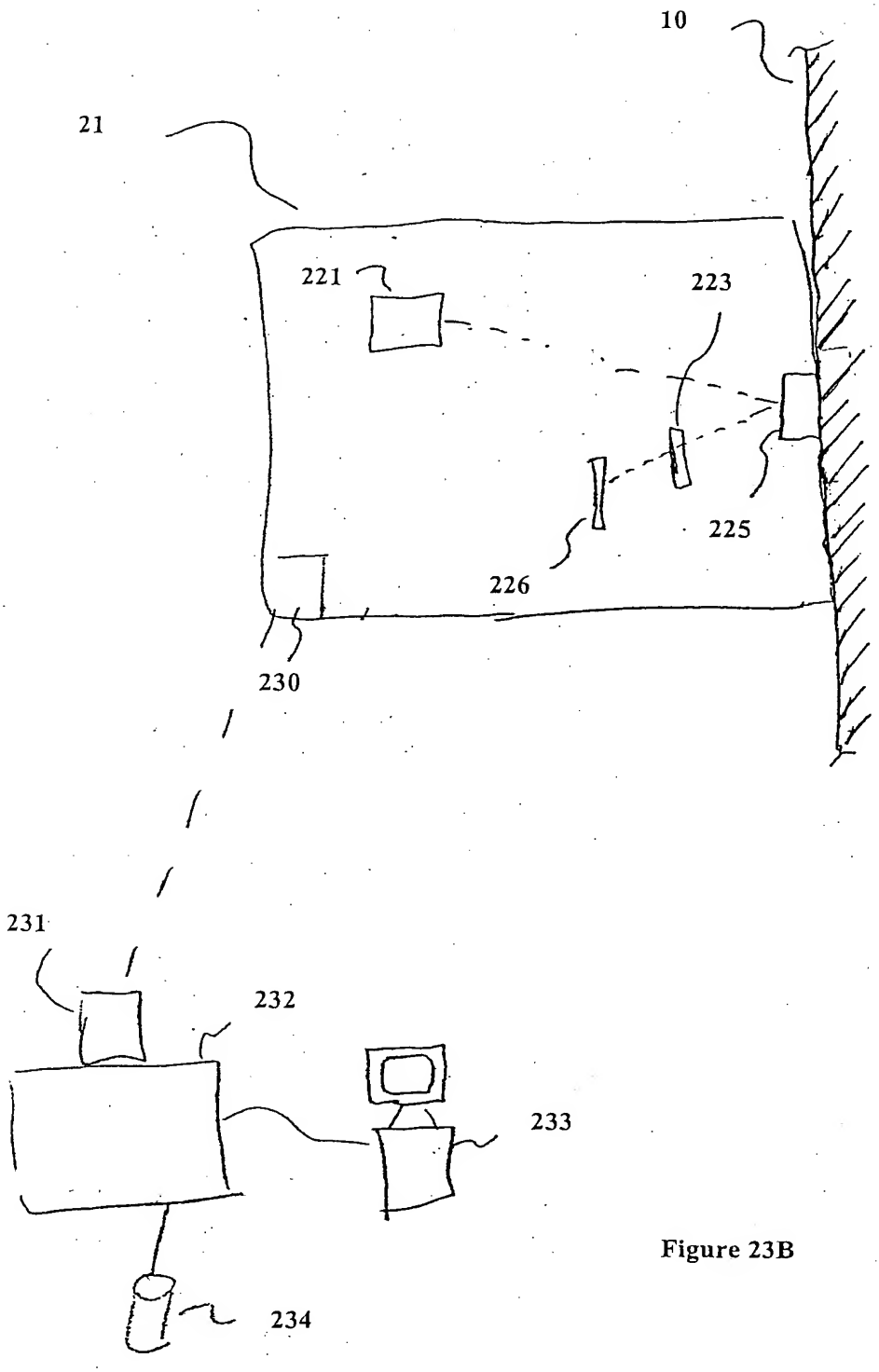


Figure 23B

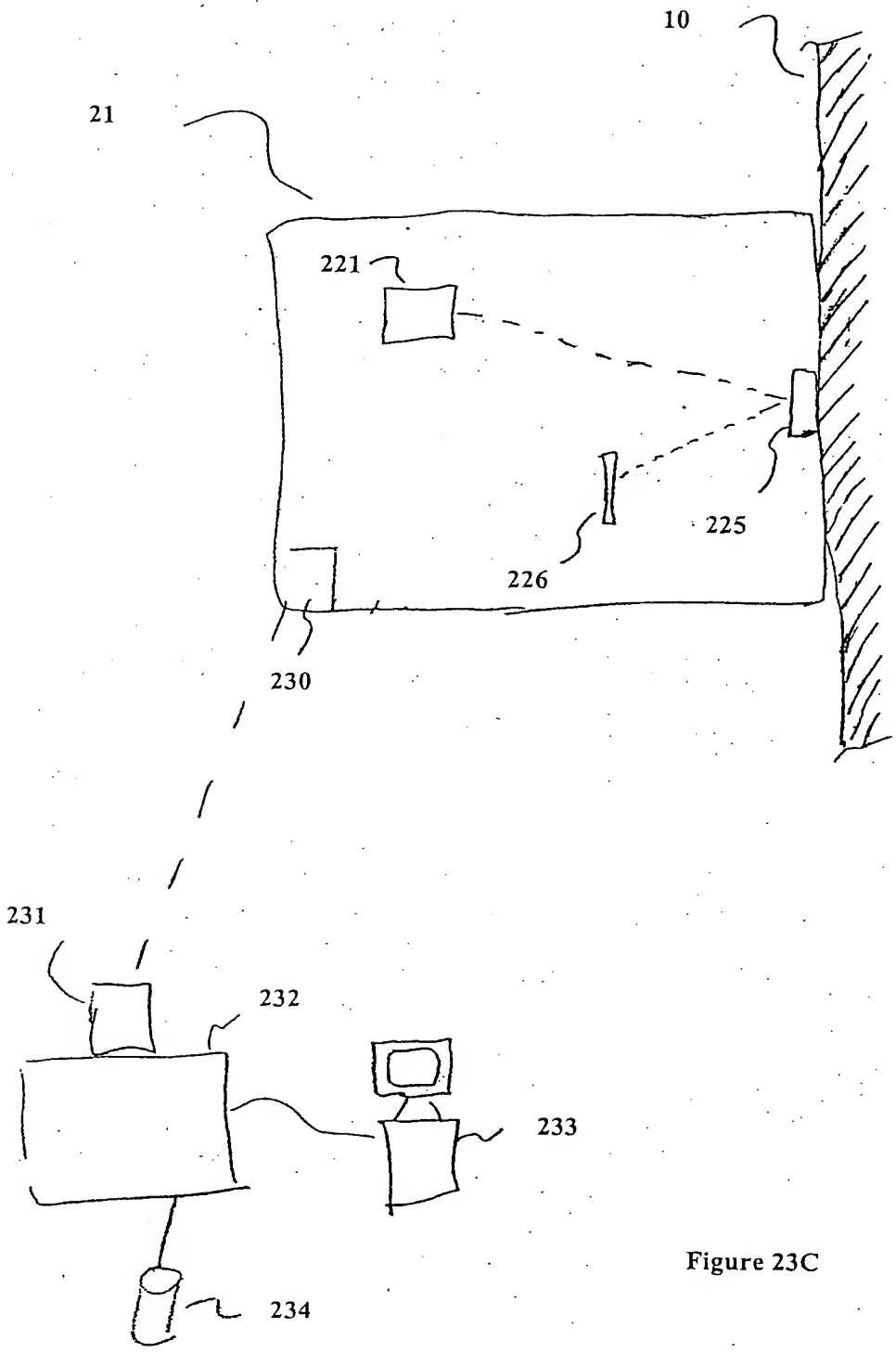


Figure 23C

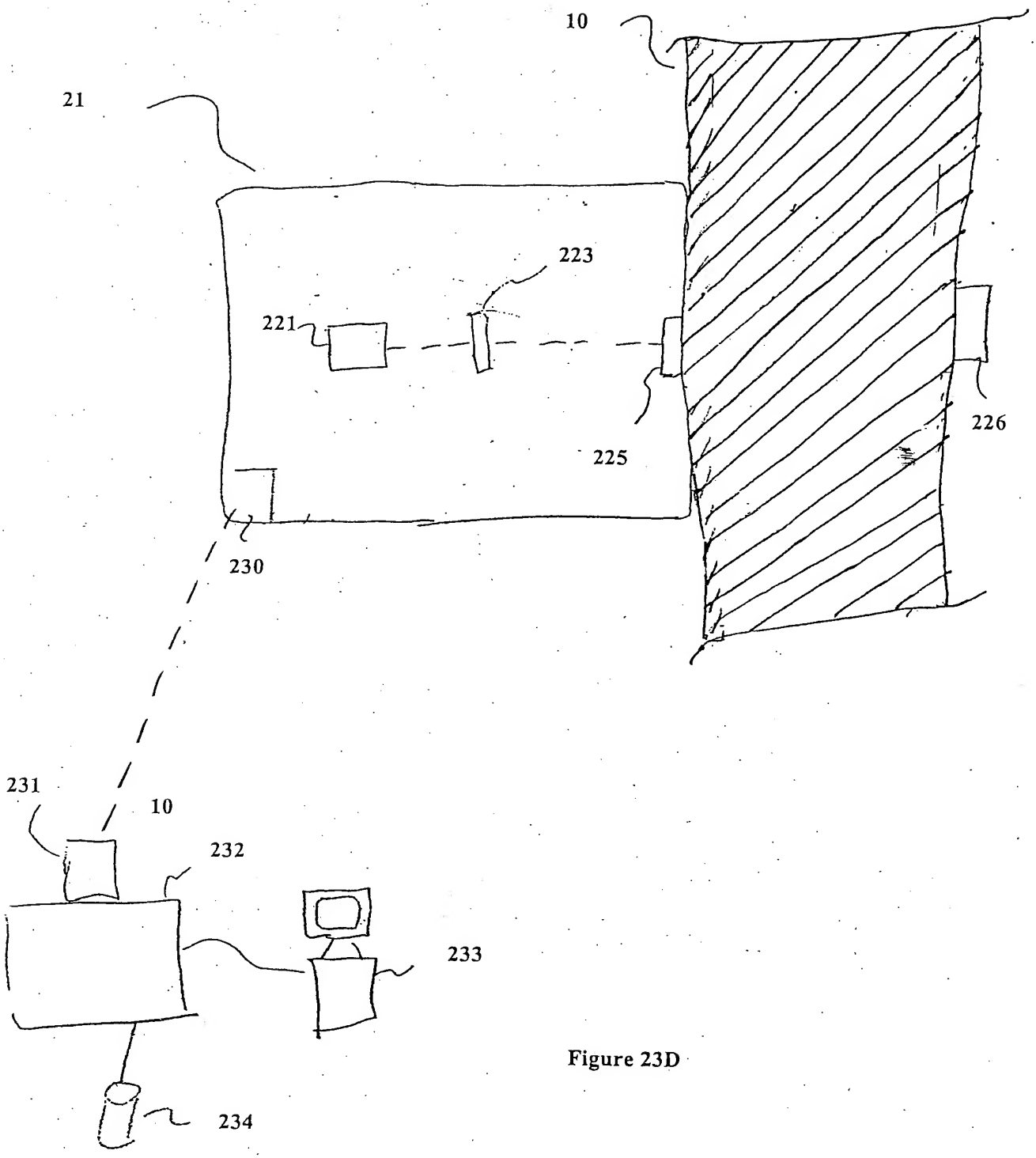


Figure 23D

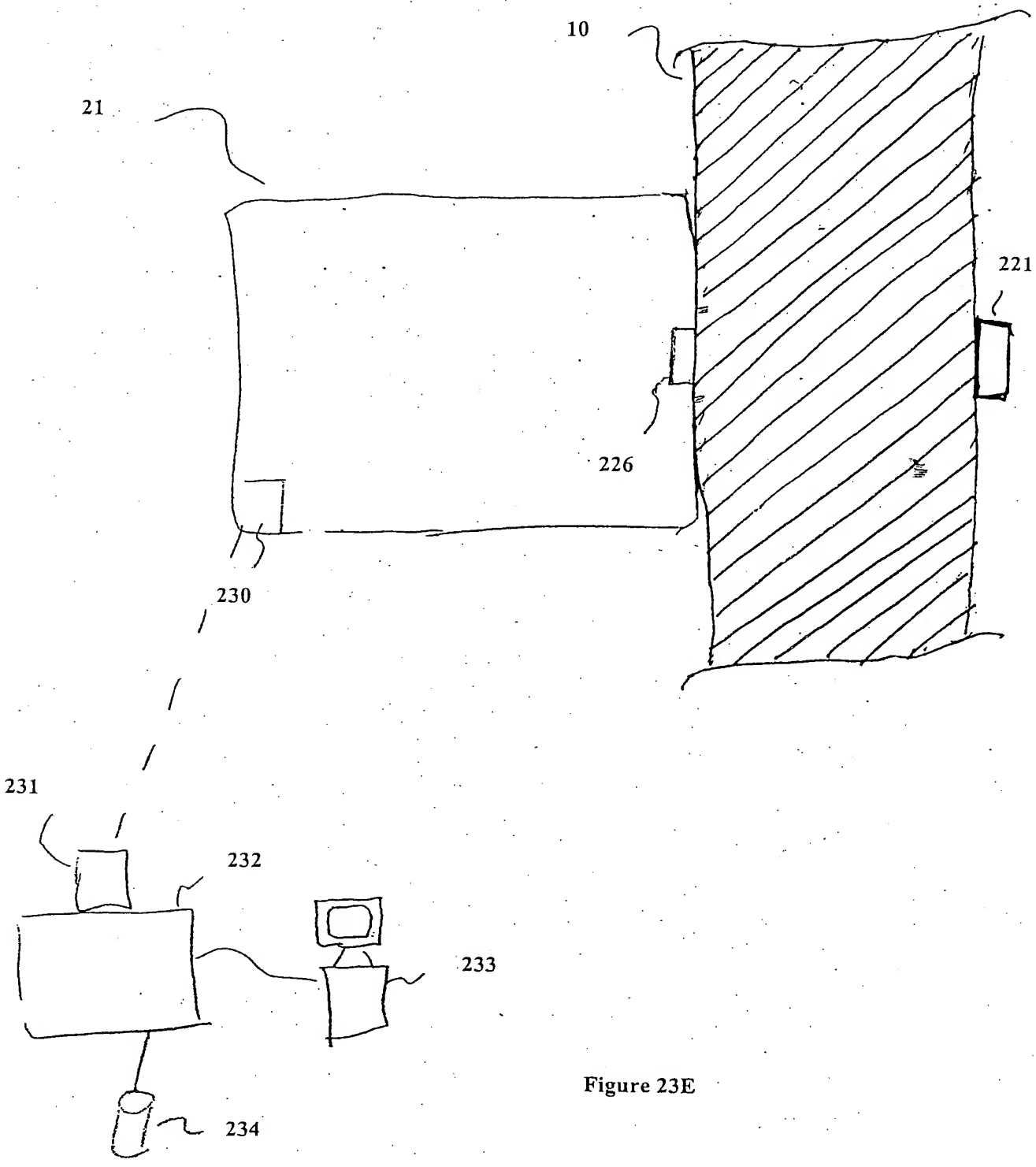


Figure 23E

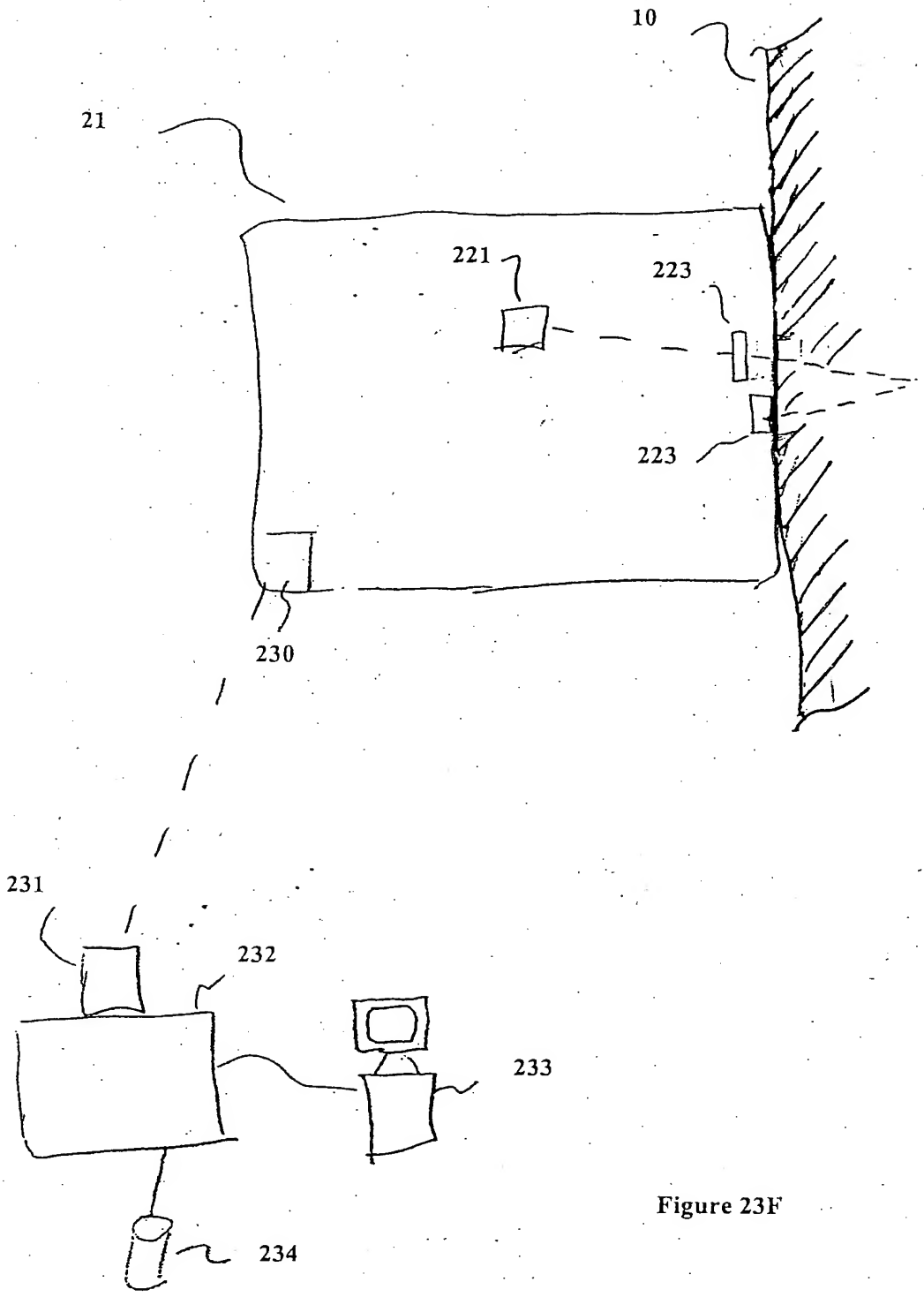


Figure 23F

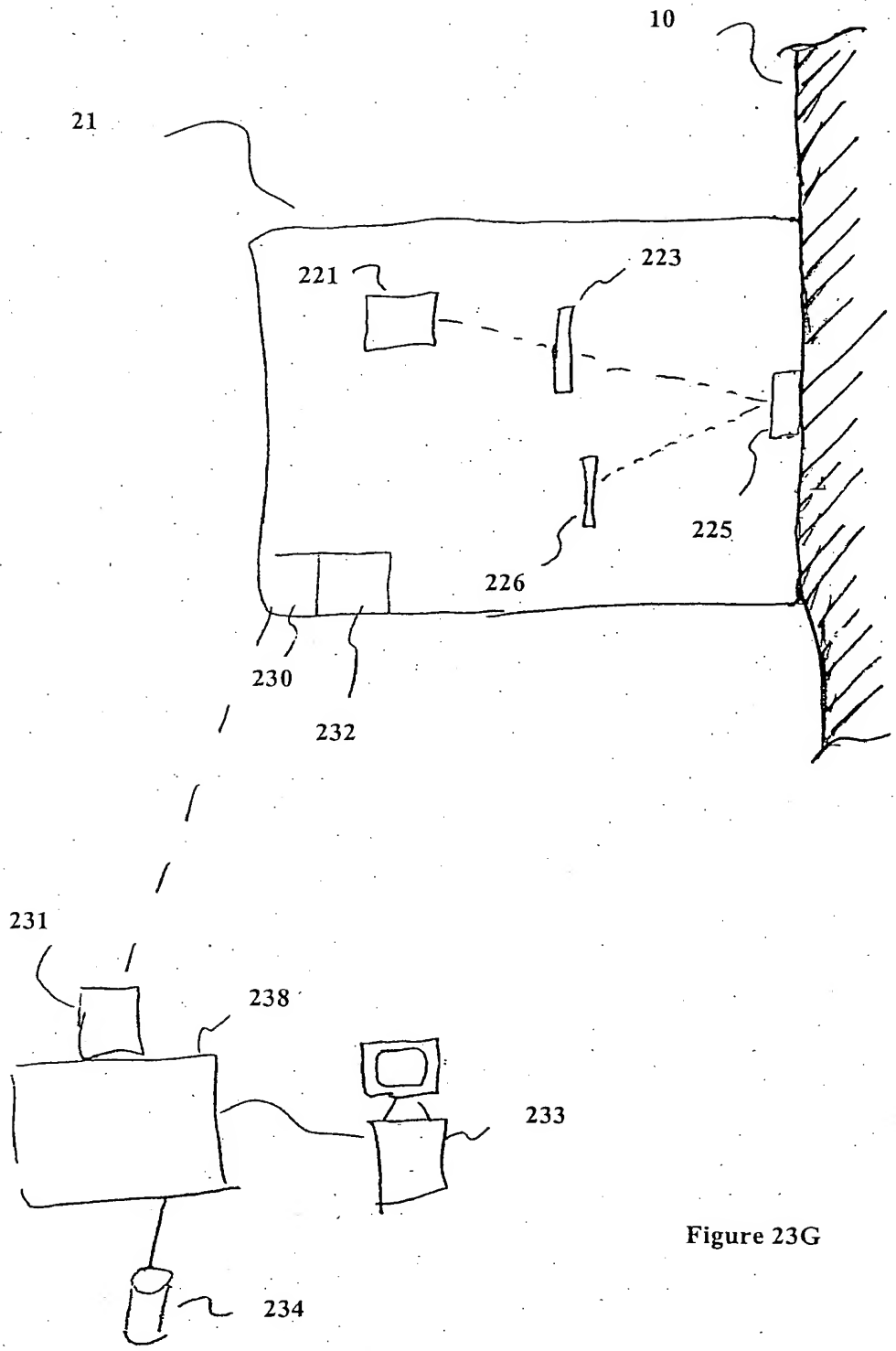


Figure 23G

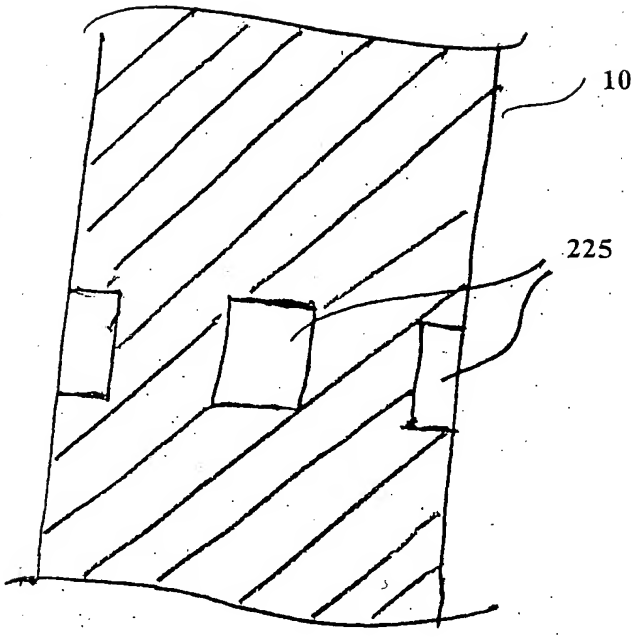


Figure 24

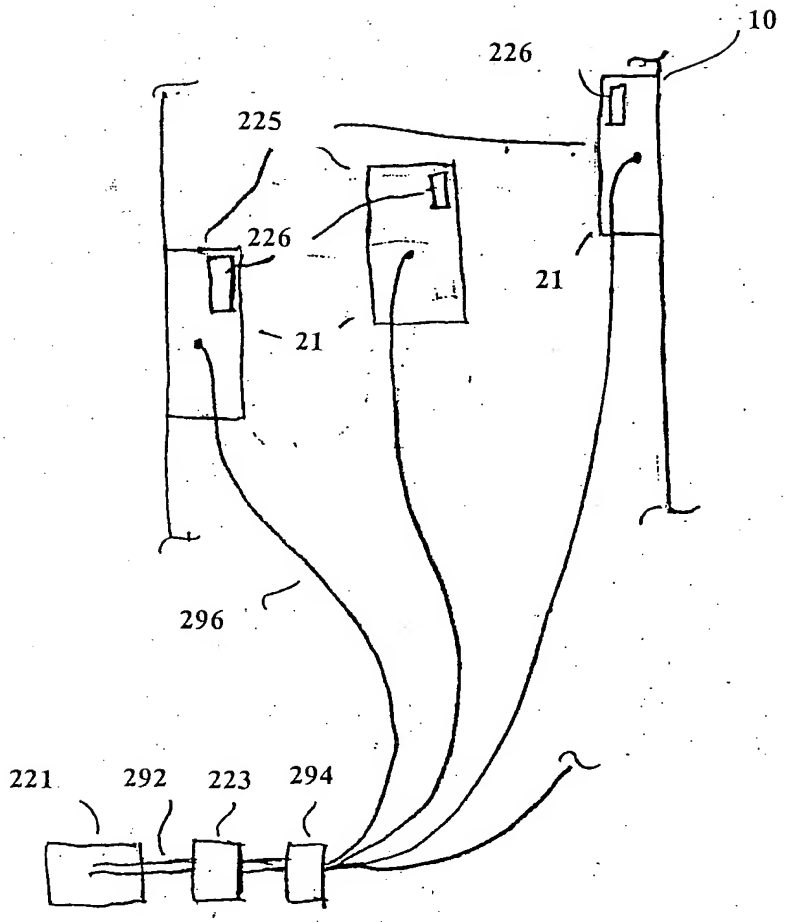


Figure 25

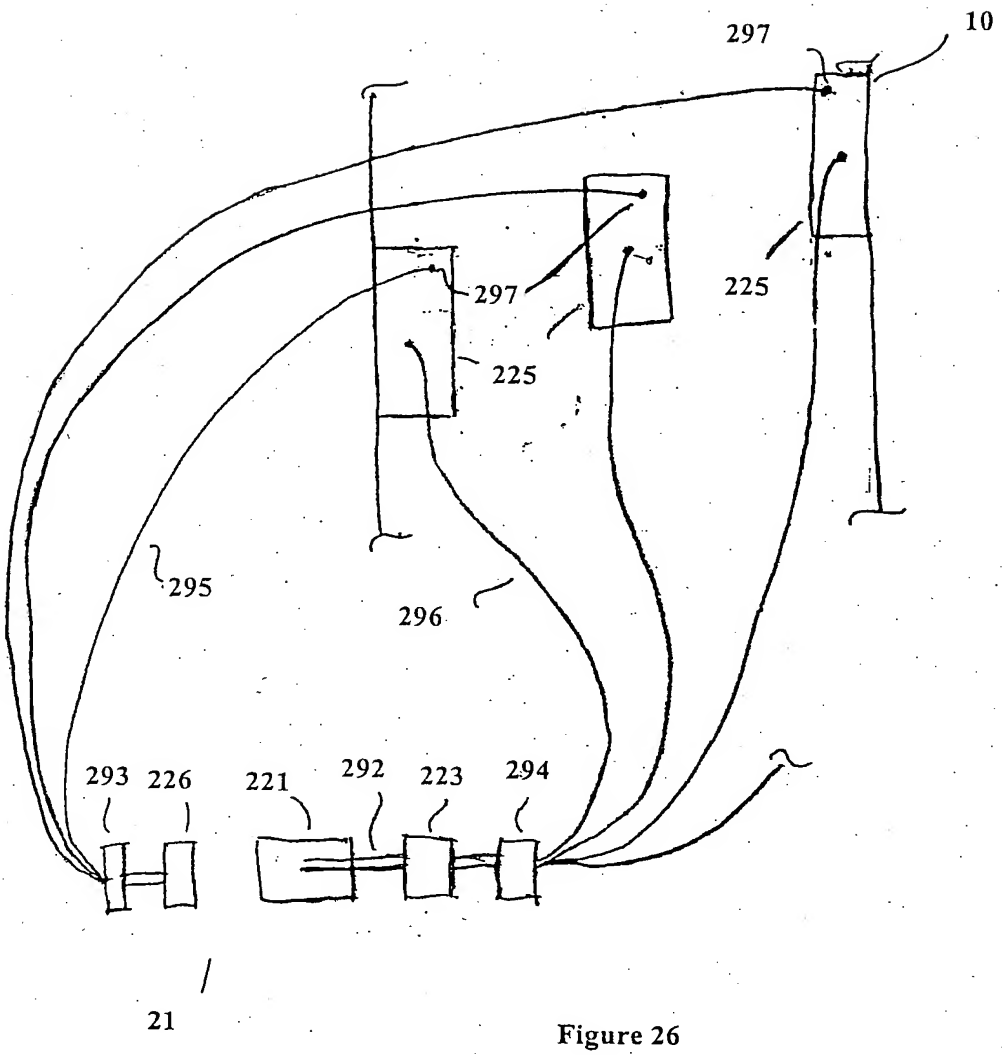


Figure 26

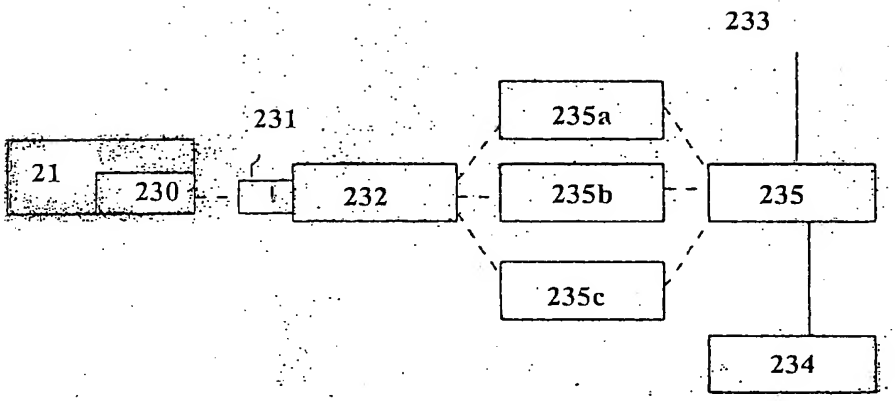


Figure 27

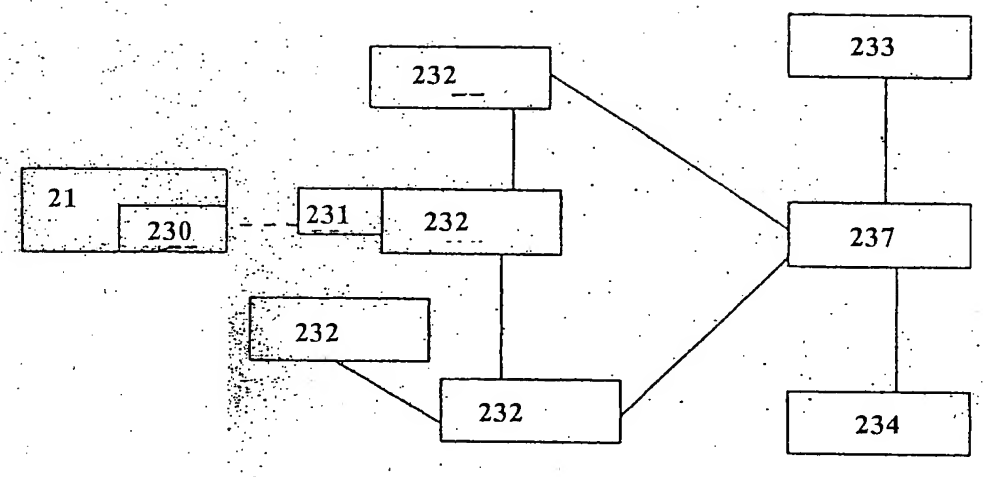


Figure 28

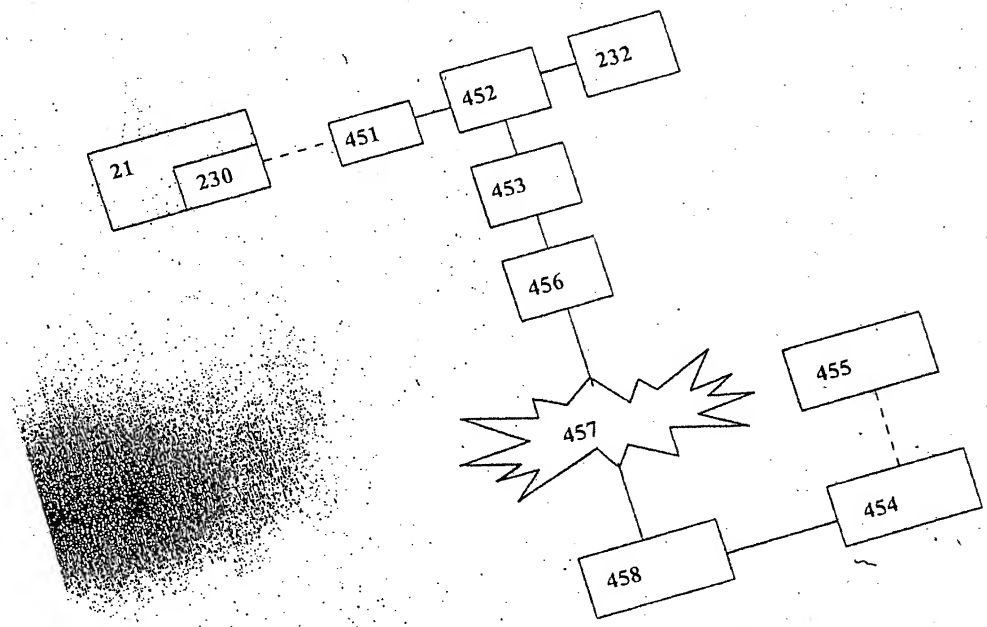


Figure 29

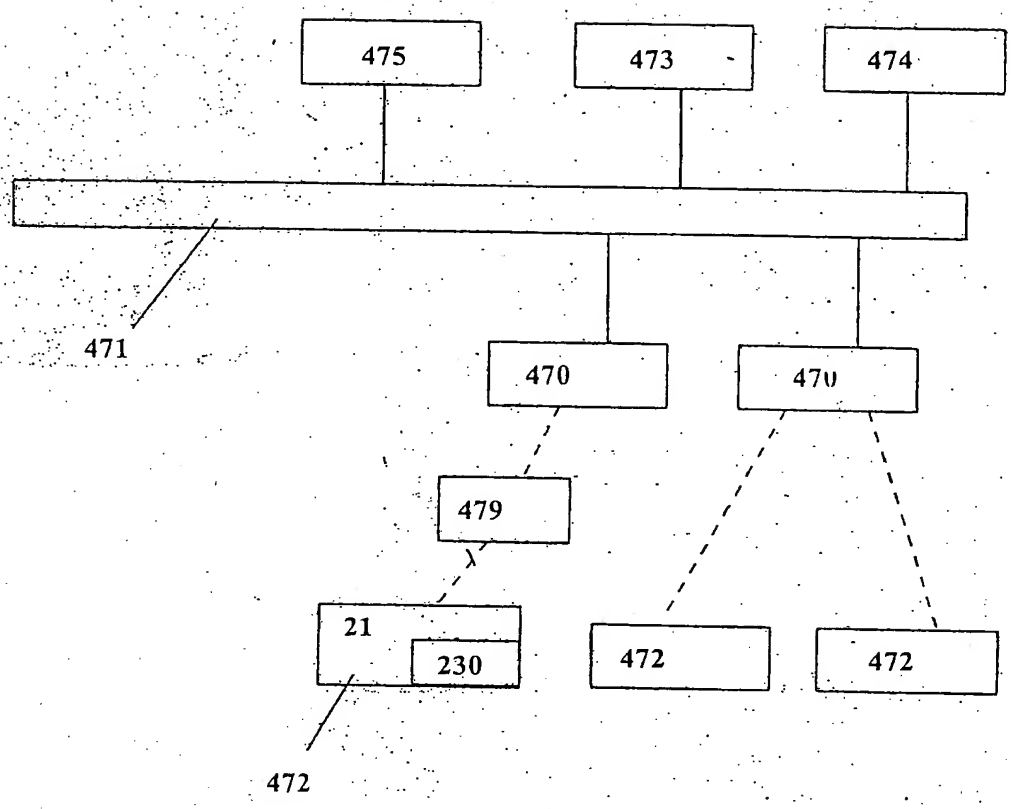


Figure 30

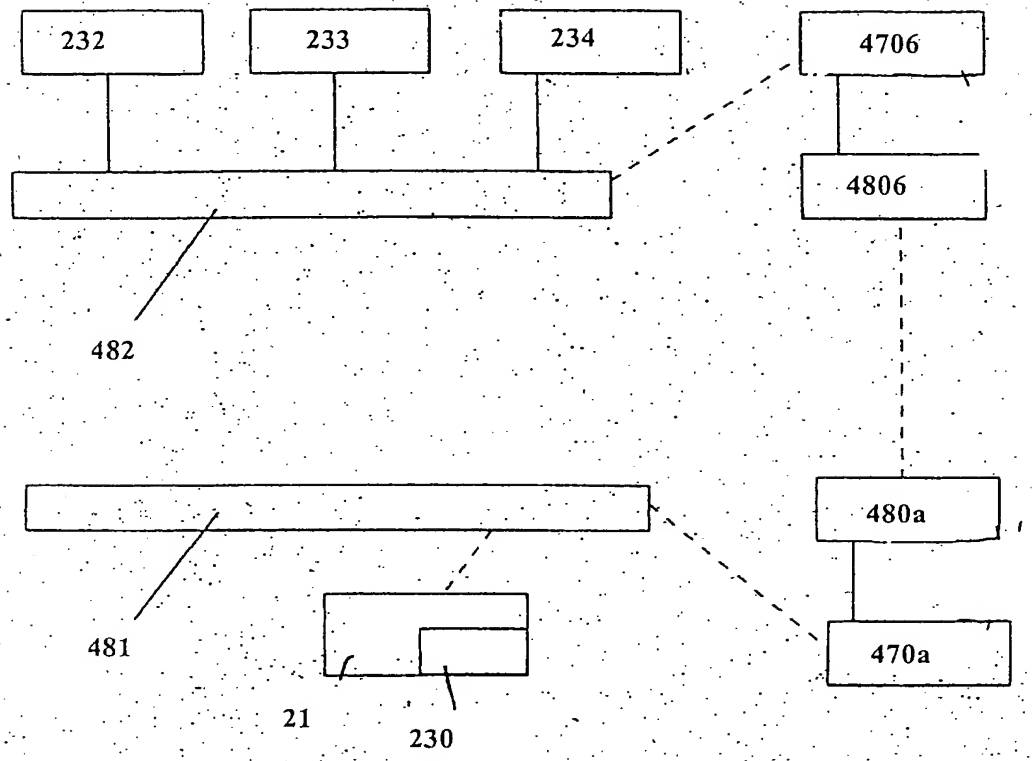


Figure 31

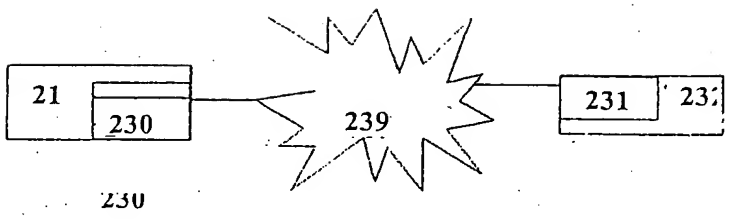


Figure 32

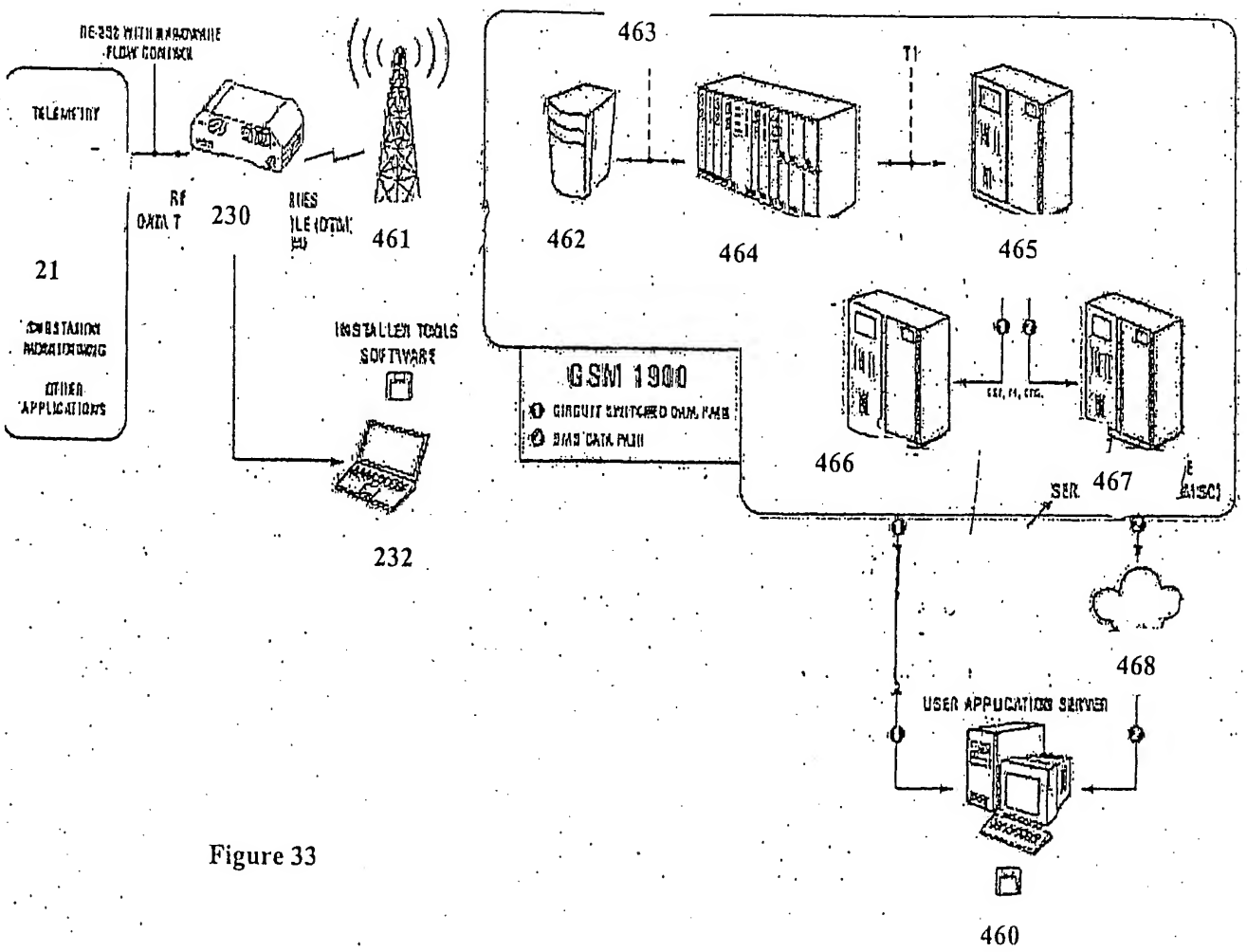

TELEMETRY
21
230
461
463
462
464
465
466
467
468
232
460
GSM 1900
USER APPLICATION SERVER

Figure 33

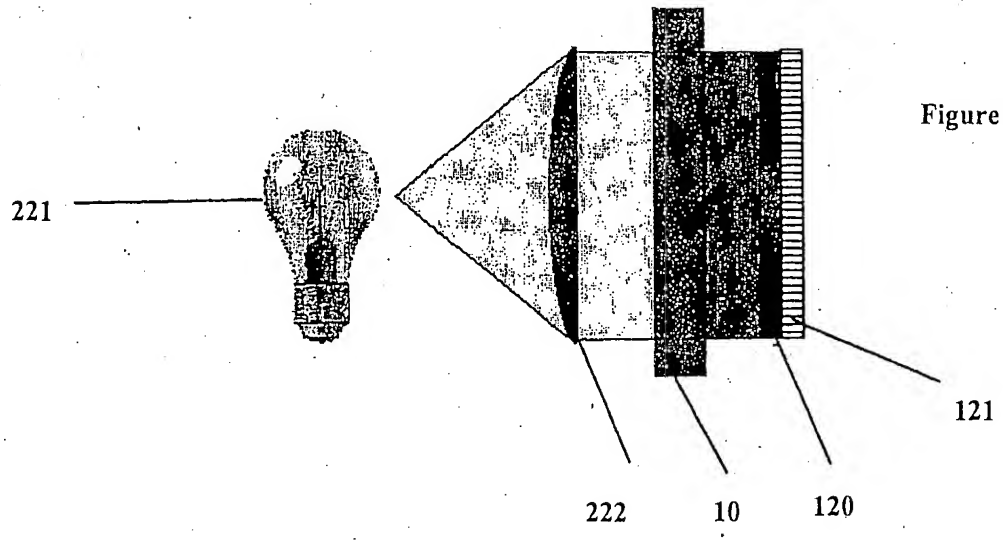


Figure 34A

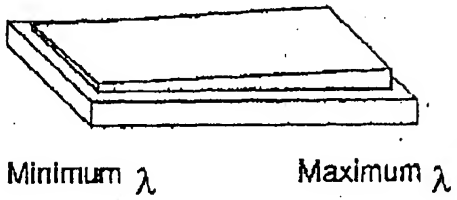


Figure 34B

Fig. 35A

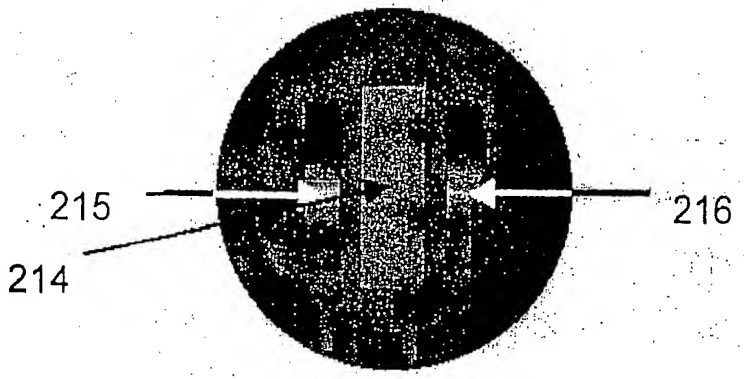


Fig. 35B

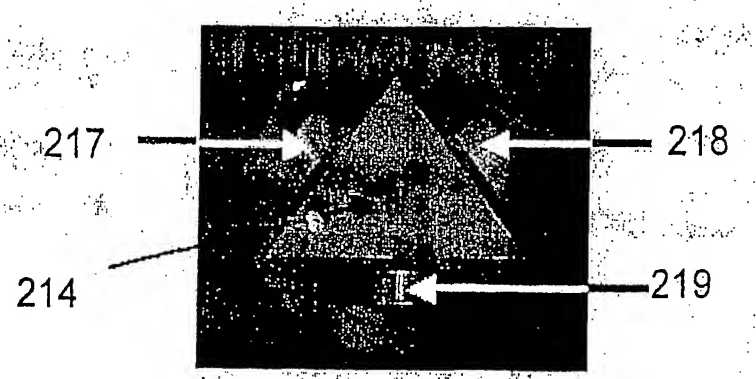


Figure 36

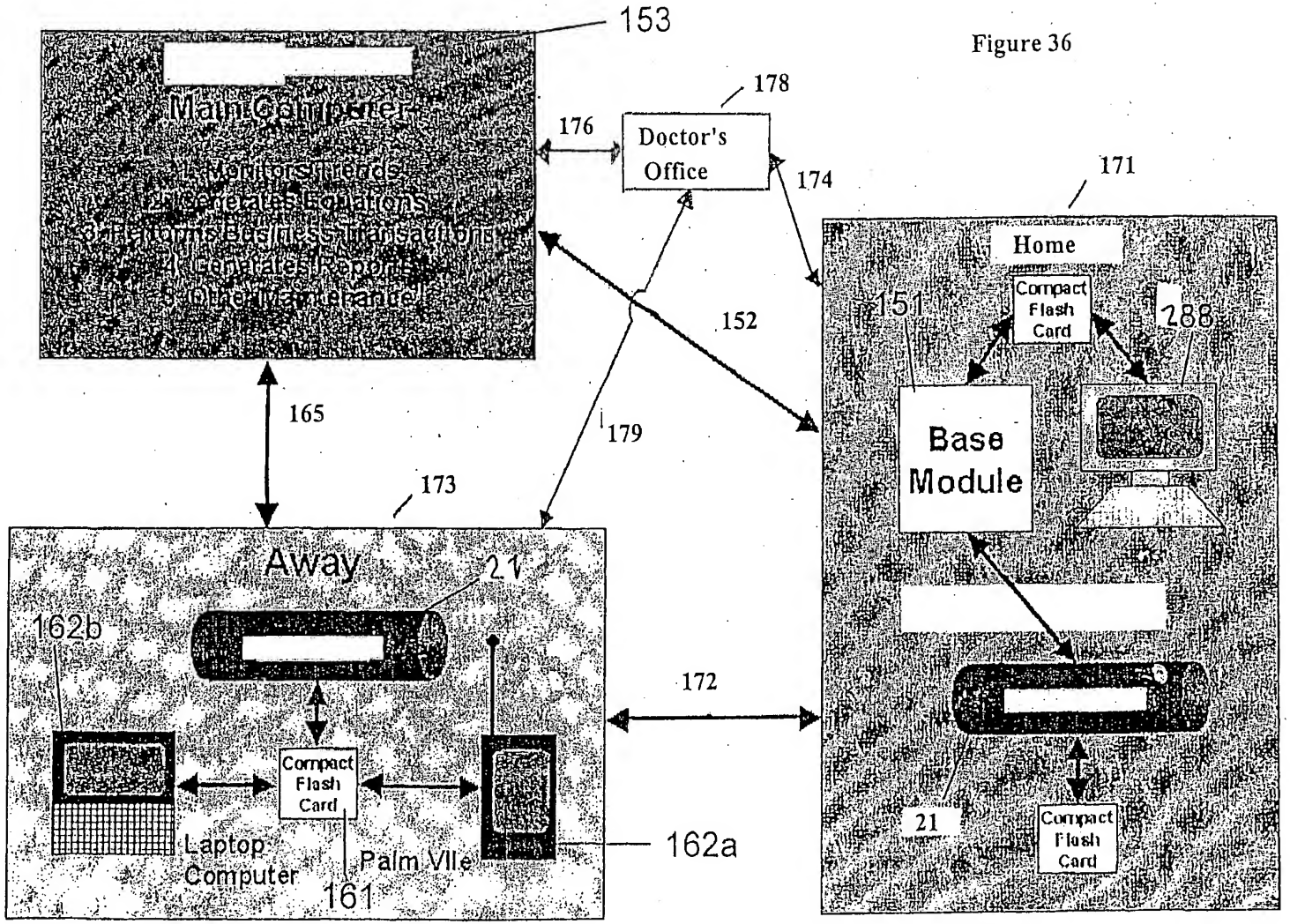
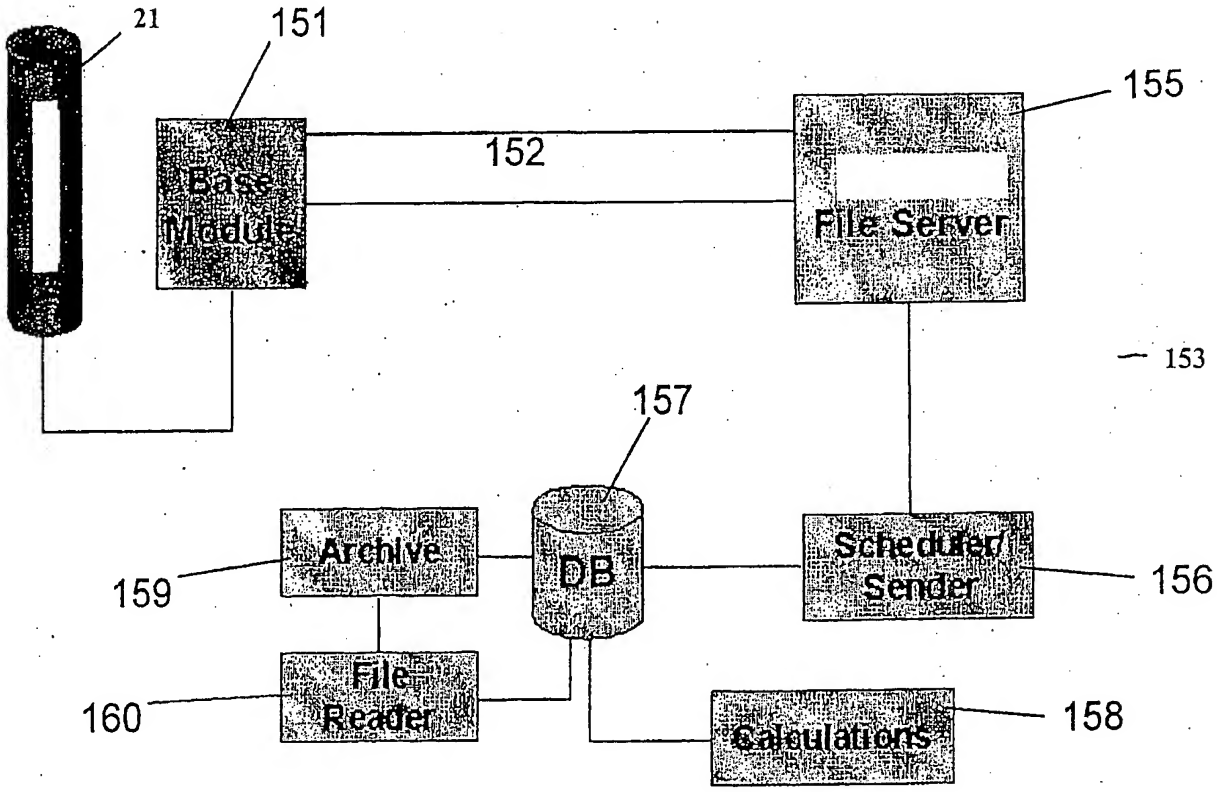

153
Main Computer
1. Monitors Trends
2. Generates Equations
3. Performs Business Transactions
4. Generates Reports
5. Other Maintenance
178
176
Doctor's Office
174
171
Home
Compact Flash Card
151
288
152
165
179
Base Module
173
Away
21
162b
172
Compact Flash Card
Laptop Computer
Palm VIIe
161
162a
21
Compact Flash Card

Figure 37


21
151
155
152
Base Module
File Server
153
157
Archive
DB
Scheduler/ Sender
159
156
File Reader
160
Calculations
158

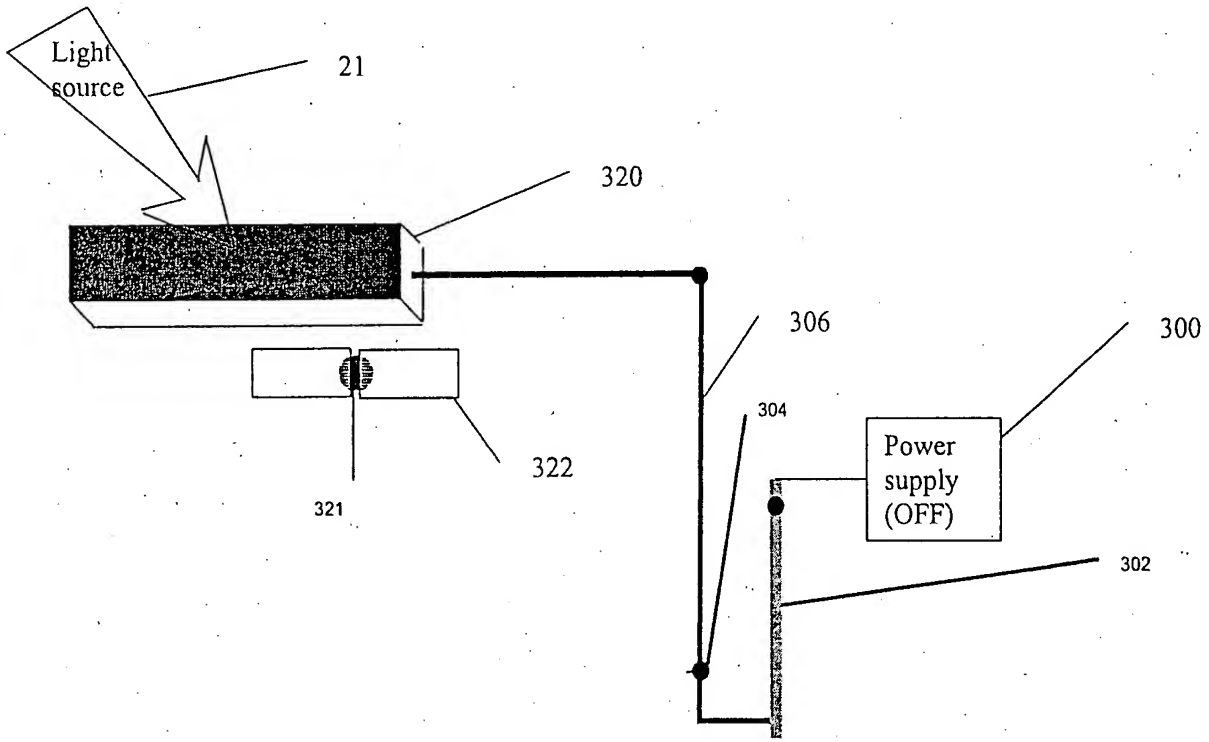


Figure 38a

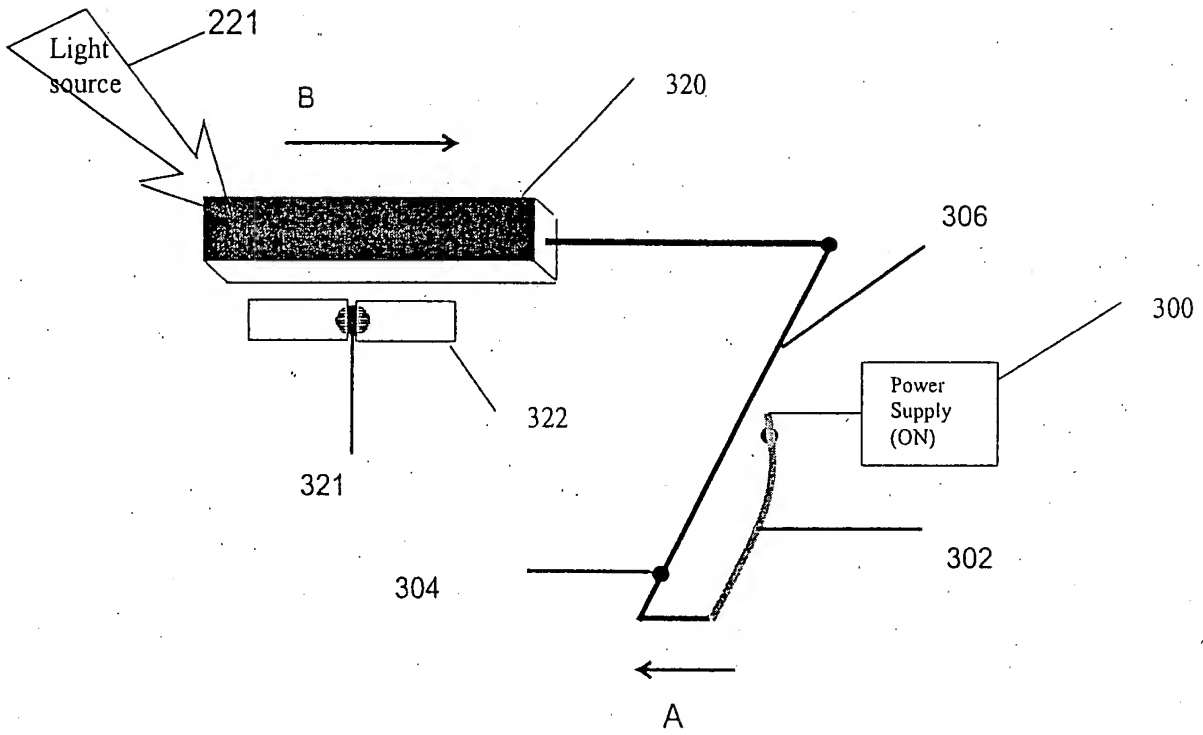

Light source
221
B
320
306
300
Power Supply (ON)
322
321
304
302
A

Figure 38B

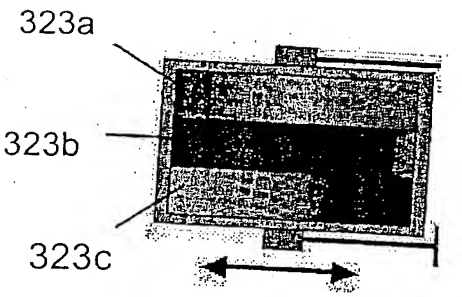


Figure 39a

324b

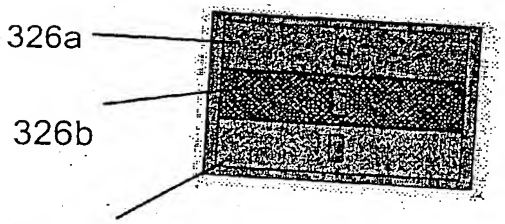


Figure 39b

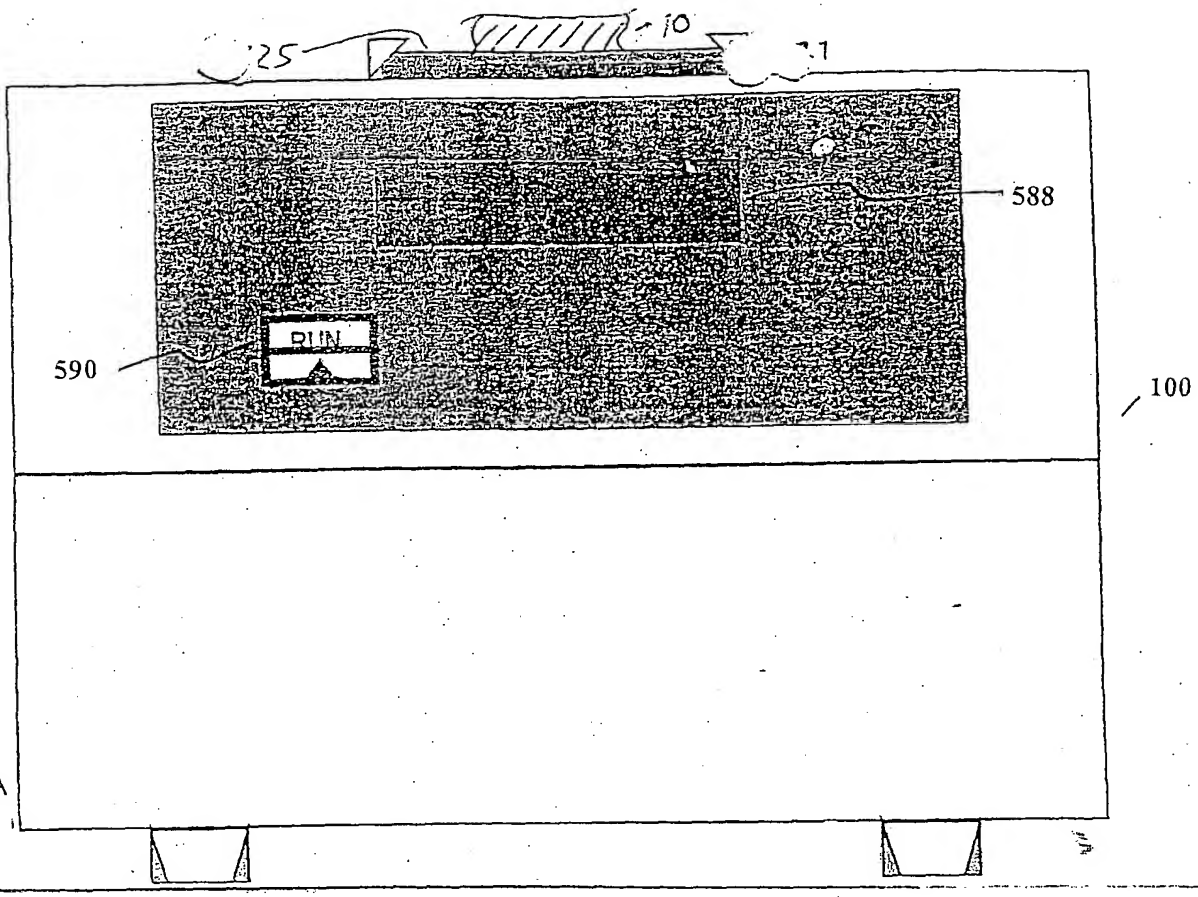


Fig. 40A

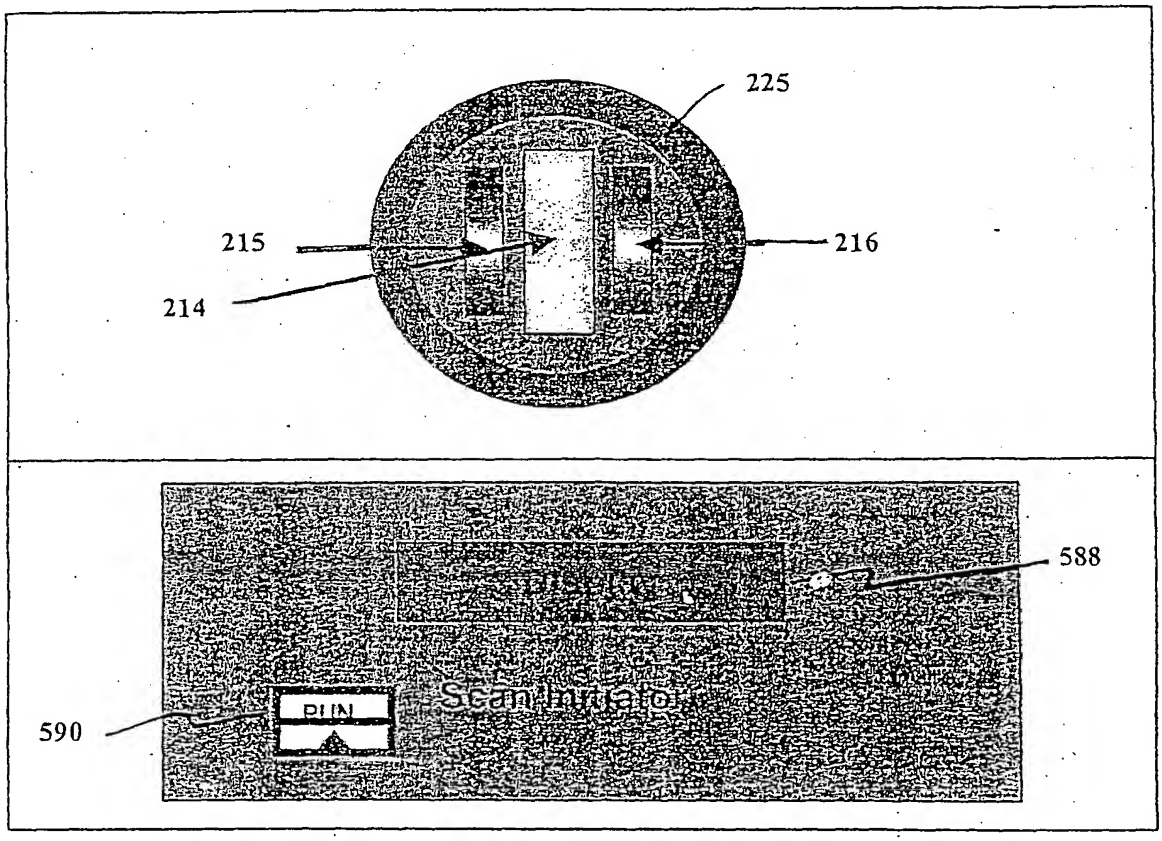


Fig. 40B

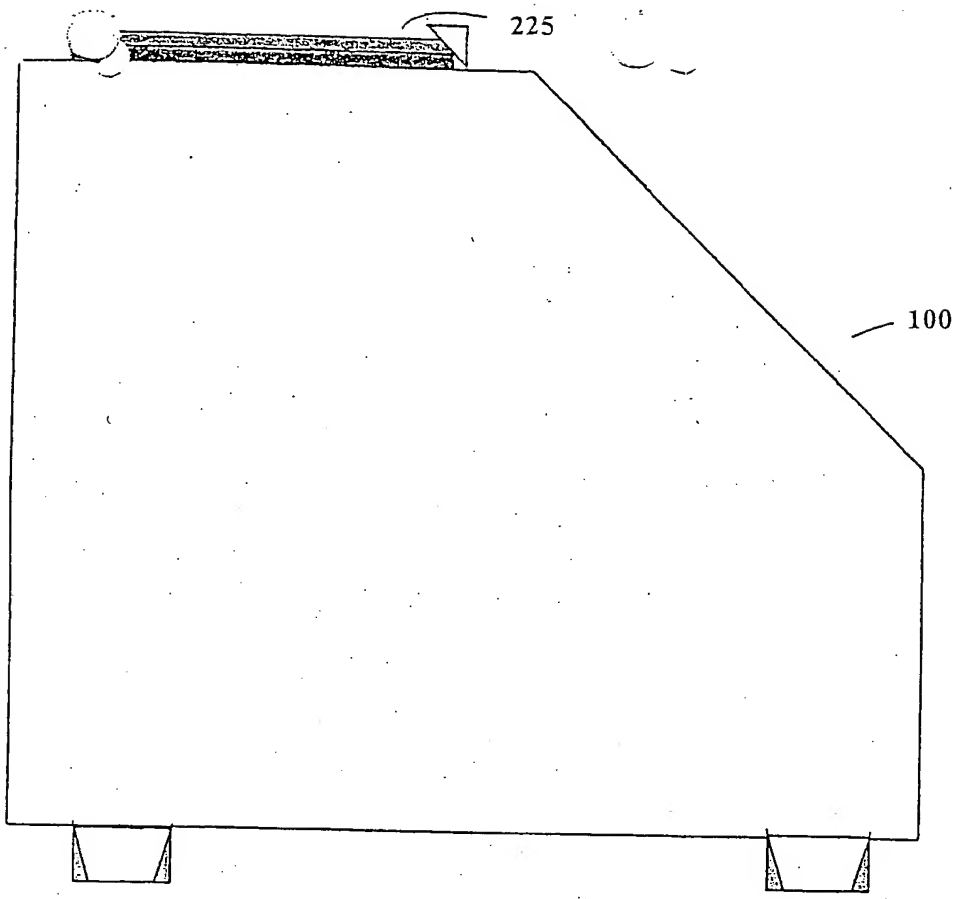


Fig. 40C

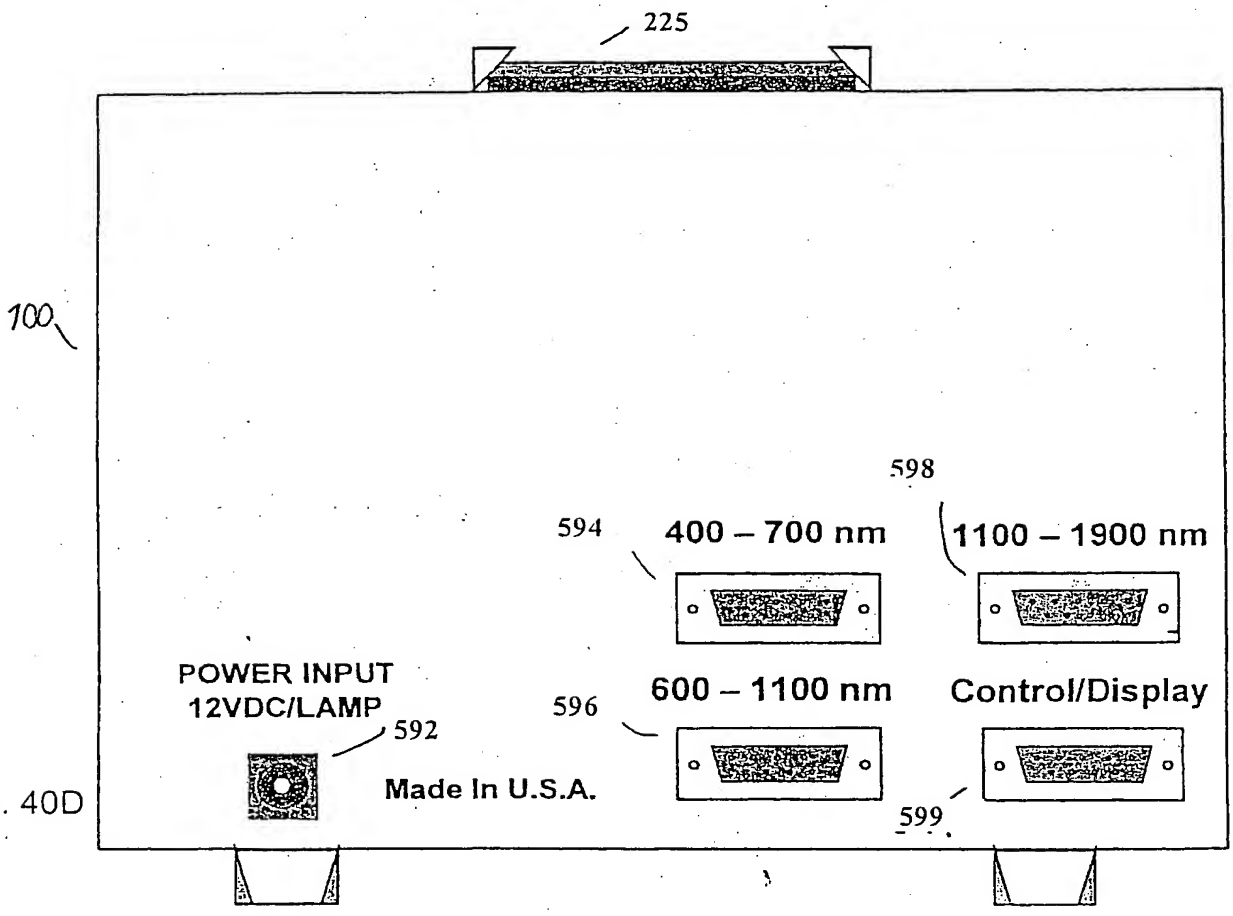


Fig. 40D